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ABSTRACT

The extent of change caused by Teacher Corps research adaptation projects is examined. A report is given of the research addressing the relative impact of these projects on practitioners, teacher educators, and students. Excerpts are presented from papers on student achievement, teacher evaluation, and the impact of Teacher Corps research on professional staff development. (JD)

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A Journal of Research Adaptation

Impact Studies 1980

Teacher Corps Research Cluster

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The Research Adaptation Cluster publishes articles concerned with educational research, staff development and educational change; issues, trends, and policy are emphasized. Materials are reported pursuant to Grant No. 300–78–0466. Views expressed do not necessarily represent official Department of Education position or policy.

Introduction

As part of its analysis/synthesis effort of Teacher Corps' research adaptation projects, the Research Cluster is engaged in a retrospective inquiry of the extent of *impact* and *change* caused by these projects. This journal is a partial report of the research addressing the relative impact of research adaptation projects on certain populations — practitioners, teacher educators or students. Two other reports will follow: a journal on the extent of change caused by the projects, and a monograph synthesizing the impact and change of 21 projects over a four-year period.

Admittedly, a fine line exists between the definitions of impact and change. We are not convinced that one outcome necessarily precedes the other, or that there is a particular sequence that dictates the processes. *Impact* may be defined as a consequence of introducing a new practice into an existing set of conditions. The type and amount of effect may be observed or measured in either quantitative or qualitative terms, or both. *Change*, on the other hand, may be defined as the improvement of the status quo resulting from an innovation, and evidenced by a measurable shift in skills, attitudes or behavior by personnel or institutions (Rosenau, 1978). The definitions seem to imply that *impact* describes implementation and its consequences while *change* suggests the maintenance of improved conditions.

Research adaptation projects were organized at a time (1975) when Teacher Corps Washington distinguished them from four other programmatic thrusts: training complex, competency -based teacher education, alternative school designs and interdisciplinary training. Consequently, research adaptation projects were linked together as an experiment to determine the processes and problems of applying validated research to the needs of public schools and teacher training institutions.

The Research Cluster began its coordinating function with Teacher Corps' 10th cycle when eight projects were identified as demonstrations for adapting validated products and practices. Washington identified seven more projects for the cluster in 1976 (11th cycle) and eleven the next year (12th cycle). Technically, there were 26 research adaptation projects over the four years spanning three cycles. However, since five institutions received grants to adapt research for two cycles (10th & 12th), we are approaching our inquiry as if there were 21 projects. The lessons learned by the five projects and the difference in their designs and methodologies are considered in our analysis/synthesis research. Essentially, all projects funded under the research adaptation thrust may be viewed as "testing labs" for validating claims made for new educational products and procedures.

Articles appearing in this journal were edited by the cluster staff and several persons commissioned to perform editing tasks. They are therefore, excerpts taken from the original papers presented at the February RAC conference held in Dallas.

Section one presents excerpts taken from papers on student achievement and teacher evaluation. Section two of the journal contains excerpts from papers covering the impact on professional staff development.■

Lee A. Morris
May 1980

Rosenau, F. *Educational Dissemination: Definitions, Acronyms, Abbreviations*, Far West Lab for Educational Research and Development, 1978 summer.

Section I

In her review of Teacher Corps Research Cluster projects in the United States, Greta Morine-Dershimer (1978) identifies three basic orientations to research adaptation: *the research orientation, the adaptive orientation,* and *the school problem orientation.*

Projects typifying the research orientation tend to identify sound research related to rather general or widespread school problems. The expectation is this research will be readily adaptable to the specific school site at which the project is based. Teachers at the participating project schools agree to become involved in training based on a particular area of research but may not have any input into the original base. Research orientation projects tend to select a single concept or a narrow base of research for application and to identify questions for further study that will expand the knowledge base in the specific area of research.

Projects typifying the school problem orientation begin by working with teachers at a local school site to identify site specific needs and concerns. A search is then made to identify research that might provide solutions responsive to those needs. These projects choose to demonstrate the process of research adaptation rather than to demonstrate the effectiveness of adapting a specific line of research. School problem orientation projects select a wide range of research for application. The expectation is that a variety of problems exist and that a variety of research is required to make a real impact on these problems. School problem orientation projects identify questions for further study stemming directly from the concerns of teachers at the local site.

The adaptive orientation occupies a more middle ground between the research orientation and school problem orientation and stresses the importance of adaptation as the key learning experience. Project documentation and formative evaluation characterize the approach to continued research with projects developing information systems and instrumentation to assess teacher reaction to training processes and to document adaptation.

The impact studies reported here typify the research orientation approach to research adaptation in that these studies involved adaptation of a specific body of research. The research orientation approach to adaptation lends itself very well to traditional research methodologies for measuring impact and rigorous experimental, quasi-experimental and correlational designs (Campbell and Stanley, 1963) characterize these studies.

Spaulding's study is the latest among several investigations he has carried out on the effect of classroom management training and teaching styles on teachers and students in the San Jose State University Teacher Corps Project. Using correlational design, path analysis, and multiple regression and test analyses, he reports on the relationship between student achievement and a number of presage and process variables. His evaluation strategy focuses on measures of variation found to occur naturally in the target school classrooms.

The data indicate that of the eight teaching styles emphasized in the project statistically significant increases occurred in the Socratic style of teaching which was adapted as part of the natural teaching style of five project teachers. A significant correlation is reported between on-site feedback sessions and case studies with incorporation of the Socratic style. Data do not support the influence of classroom management and teaching style training on student achievement in reading and mathematics. A significant correlation is found between teaching styles taught in the inservice program and the project team leader's ranking of colleague commitment to professional development. No significant correlations exist between teaching styles and other indices of teacher readiness to participate in Teacher Corps activities.

Experimental design and observational approaches are used by Price to analyze the impact of the multiple talent approach on teachers and students in the Murray State University l0th Cycle Teacher Corps project. The multiple talent approach includes several intellectual factors in addition to increased academic skill: decision making, planning, forecasting, creativity, and communication. The multiple talent approach operated on the principles that: (l) almost all children possess talents of a high order; (2) these talents can be identified; (3) these talents can be enhanced; and (4) success in one school endeavor can lead to increased success in others.

Psychometric data show there was a significant improvement of school climate with the most demonstrable gains related to individualization of instruction, development of career talents, and reinforcement of self-concept. Data from the Comprehensive Test of Basic Skills reveal a gain in one year of at least one grade level in all areas except Language Mechanics with large gains in areas related to study skills and research/reference skills.

Observational and tabulation data indicate several significant changes:

(l) Teachers moved from not using any classroom observation systems to regular videotaping of their classes and each others' classes.
(2) The school moved from having the worst attendance record in the district to having one of the best.
(3) The school went from one in which no teachers used learning centers to a school in which most teachers used learning centers.
(4) The administrative structure changed, as well as role perceptions of administrative and supervisory personnel.
(5) A voluntary parent tutoring program was implemented.
(6) The library changed from a book depository to a multi-talent development center for students.

D'Ambrosi reports that the main impact of the 12th Cycle Trenton Teacher Corps project was the development of an elementary school faculty into a group capable of executing change within itself, specifically, the planning and implementation of the Reading Comprehension Skills program. Data collected through the use of a quasi-experimental post test design and school wide criterion referenced performance analysis show significant gains in reading comprehension scores for grades 3-6. Observational data based on random classroom visitations indicate that over a five month period reading comprehension skills were the topic of instruction 72 times. All the reported data verify the occurrence of an effective curricular and institutional intervention in reading instruction.

Precision Teaching and direct instruction were the two major research adaptation thrusts of the Glassboro State College Teacher Corps Project. Brent and Zimmerman's pre and post test and tabulation data indicate that initially these teaching strategies were successfully implemented while Teacher Corps was operating in the target site. After the project terminated there were variations in the maintenance of the teaching approaches ranging from 32 percent maintenance to 100 percent maintenance. The Precision Teaching adaptation led to improved pupil performance and preliminary data suggest that direct instruction also impacted on pupil performance.

In summary the four studies on the basis of data collected through experimental, quasi-experimental, and correlational designs show that three research adaptation projects had a significant educational impact on the performance of teachers and students with one project having a negligible impact.

Evaluating teacher growth and measuring student learning and gains in terms of academic achievement and affective growth as related to the goals and objectives of a specific Teacher Corps project is a paramount concern of any project but particularly one focusing on research adaptation. Since the ultimate objective of Teacher Corps Research Cluster projects is to introduce and demonstrate through research adaptation, needed innovation and change to increase the effectiveness of education for low income, special needs, and minority group children, it is obvious that ways need to be found to determine the degree to which this objective is achieved. What happens to student learning when research validated practices, products and processes are systematically adapted to bring about organizational, curriculum, and behavioral change? Will students change in their perceptions of self and others? What kinds of attitudinal and behavioral changes will occur among students? What is the relationship between Teacher Corps preservice and inservice instruction for teachers and student cognitive and affective growth?

As these four studies demonstrate, the experimental method is an effective research approach for measuring the impact of a project. But the experimental method for evaluating teacher and student growth as outcomes of a Teacher Corps project has some problems. The application of the experimental design requires that experimental and control conditions be held constant throughout the length of the experiment. This means all students and/or their teachers must receive the same amount of treatment to which they are assigned so students receiving one type of treatment are not contaminated by the other. If data about differences between students and teachers participating in a Teacher Corps program and students and teachers not participating in the program are to be meaningful, treatments cannot be modified while the experiment is in progress. In accepting the rigorous conditions of the experimental method, one is asked to fit the program to the design rather than vice versa. The use of the experimental method would, then, conflict with the fundamental principle that evaluation should lead to the continual improvement and modification of a Teacher Corps program. Project staff cannot be expected to limit their demonstration efforts and activities to accommodate the constraints of a research design just to guarantee internally valid data. As project staff members learn about the strengths and weaknesses of their project activities, they may have to change and sometimes radically alter the project in order to meet the needs of the project's constituencies and clients.

Another limitation of the experimental method is that it yields data about the effectiveness of a project after the fact. Therefore, while it is useful as a judgmental device, it has little value as a decision-making tool. After the fact data are not provided at appropriate times to enable the members of a project staff to determine what their project should be accomplishing or whether it should be altered in the process. Often by the time experimental data have come in, it is too late to make decisions about plans and procedures whose nature often determines the difference between the success and failure of a program to have major impact.

An alternative evaluation methodology is the case study approach which offers a comprehensive and intensive means for investigating the variables involved in determining the nature and the extent of program impact. Physicians, psychologists, and anthropologists have developed procedures and models for preparing case studies that meet the needs of their professions and which can well serve the needs of the teaching profession and change projects such as Teacher Corps in order to validate project impact.

Direct contact and extended observation of teachers and students themselves often are necessary to reach conclusions related to project variables involving impact on teachers and children. The case study provides an effective means for examining in detail the intervening events, forces, and activities affecting the life of each teacher and student and the project interventions and research adaptations which do or do not influence individual, group and organizational impact. Studies of this kind are needed to investigate the developmental histories of different teachers and student populations targeted by Teacher Corps in relation to a particular project's objectives. *In a profession where there is a basic commitment to the teaching and understanding of the individual, it is ironic that research devoted to the full study of single individuals is so rare.*

However, the most compelling point to be made in

this introduction is that these studies offer empirical evidence that Teacher Corps research adaptation projects have impacted on the lives and behavior of teachers and adolescents. Research adaptation through Teacher Corps has made a difference. What else needs to be said? ■ Gerald J. Pine
The University of New Hampshire

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Trenton Impacts Through Inservice

BY SYLVIA S. B. d'AMBROSE

Project:	Trenton State College/Trenton Public Schools
Cycle:	12th
Site:	Wilson Elementary School
Site Description:	Trenton, the N.J. capital is a declining industrial city. Wilson Elementary School (1978-79) has 488 pupils, grades K-6. About 86 percent of students are black, 12 percent Hispanic speaking. Majority come from low-income families. Of the primary grades, 35 percent were enrolled in Follow Through program. Total staff — 19 classroom teachers and 11 aides. This staff was augmented by a small group of special teachers including compensatory education teachers for reading and math. The principal is the only administrative staff member in the school.
Project Thrust:	An inservice training program emphasizing the taxonomy of Reading Comprehension developed by Thomas Barrett (undated). Reading abilities are categorized into four areas: (1) literal meaning, (2) inferential meaning, (3) critical thinking and (4) appreciation.

The Trenton Teacher Corps' main vehicle for change was inservice training conducted over an extended period of time by both the school and college staff. This training ranged from small group work/planning sessions and classroom support visits by college faculty, to school-wide workshops. The effects of this faculty inservice program are thought to be highly related to an observed increase in the performance of Wilson School students on reading comprehension measures.

Impact on the Permanent System

The impact of implementing reading comprehension skills was evidenced in terms of the five elements identified by the project staff as critical to successful program implementation:

1. Gradual take-over of decision-making responsibility for planning and operating the Reading Comprehension Skills program by the Wilson School staff.
2. Preparation of comprehension skill materials by Wilson teachers and paraprofessionals.
3. Establishing a specific time for comprehension skill instruction to be used during the regular school day.
4. Designating teachers to plan and conduct inservice workshops as needed for the program.
5. Provision of in-class inservice assistance by college faculty during the comprehension skills instruction time.

Student Test Scores and Classroom Environment

The research effort focused on investigating the relationships among variables related to instructional intervention, student's background, and student reading comprehension performance.

A quasi-experimental posttest design was used. Students were given Form 'S' of the Comprehensive Test of Basic Skills (CTBS) reading comprehension subtest on their respective grade levels in September 1978, and March 1979. Grade two received the Level 'C' test, grades three and four received Level 1, and grades five and six were given Level 2. Student assignment to a teacher for comprehension reading skills was the same as their assignment for basal reading and was based on a placement test given September 1978.

During each month of the school year, every student received two weeks of daily instruction focusing on a particular comprehension skill at a specific reading level. The skill and level were determined by the teacher and varied according to the students in each class. At the end of each of nine two-week reading comprehension cycles, each skill/ level group completed a short test that corresponded to the comprehension skill and level on which instruction had occurred. Other individual student data were generated from students' permanent record files.

Data from three sources describe the impact of the reading comprehension skills program on students.

Student Gains on CTBS

Analysis of student performance on the CTBS using normal curve equivalent (NCE) scores permit comparison of student reading comprehension performance at Wilson School to national norms. The data shows that grades three to six increased in standing relative to the national comparison sample while grade two re-

mained virtually unchanged. Interestingly, the grade two pretest mean was 12 points higher than the pretest mean score of any other grade level. It should be noted that the grade two teachers reported difficulty during administration of the test due to the reading level and vocabulary required by Level 'C' of the CTBS.

The *t*-test results indicate that gains in reading comprehension scores for grades three to six are significant beyond the .01 level. As such, growth as seen in the CTBS reading comprehension scores demonstrates occurrence of an effective curricular and instructional intervention in reading comprehension at Wilson School.

Skill/Level Comprehension Tests

School-wide performance analysis indicating the percent of pupils passing the criterion of 80 percent correct on the posttests (tests of 5 items for level readiness — grade three, and 10 items for higher reading levels) for each literal skill area yielded the following information: detail, 72 percent; main idea, 58 percent; sequence, 72 percent; cause and effect, 61 percent; and comparison, 57 percent. The performance results of these same students using these instruments as pretests were: detail, 47 percent; main idea, 28 percent; sequence, 30 percent; cause and effect , 39 percent; and comparison, 39 percent. Note the percentages for any given literal skill level are based on combining the results from nine different tests focusing on the skill at the nine different reading levels. An increase from pretest to posttest in the number of children reaching the criterion score of 80 percent correct is evident. However, part of the observed increase may be attributable to practice effects.

Correlations Between Student Variables

For students in grades one to six combined, "mother's educational level" correlates fairly well, $r = .215$, with the posttest NCE scores, while it is low, $r = .056$, with respect to the posttest grade equivalent scores, since the latter scores tend to increase as higher levels of the tests are used. The scale for NCE's has a constant range of 1-99 for any student at any grade level.

The number of days present during the 1978-79 school year, a variable generally regarded as affecting school performance, is somewhat related to "mother's educational level," which suggests that the home environment supplies a source of motivation and discipline to attend school. A proxy measure of student transiency was found in "the number of years of attendance at Wilson School" which varies positively with the posttest NCE scores, $r = .114$. However, it does not reflect the "mother's educational level" to any great degree, $r = .060$.

Classroom Observation Data

Conservatively, the data show the comprehension skills were the topic of instruction at least 72 times from February to June 1979. In combination with the other forms of data demonstrating aspects of skills used, the conclusion may be drawn that Wilson School did implement the use of the reading comprehension skills program to varying degrees in every classroom from grades two to six.

Why Did Impact Occur?

Factors contributing to the impacts of Cycle 12 have been divided into three interdependent descriptive categories : collaboration, management style, and faculty development process.

Collaboration

Collaboration was a constant occurrence in the planning as well as the development and implementation phases of Cycle 12. Staff members at Wilson School heavily influenced such temporary system operation as decision-making, problem-solving and communications (Gant, et al., 1977) as was demonstrated by the staff accomplishing the first of the five elements for implementation. Interaction between the college and school staff during the planning and material development stages resulted in system changes through the diffusion of knowledge and implementation of educational innovation.

Management Style

Highly intertwined with collaboration, management style may be viewed as an "attitude" set by the project director permeating the project. This led to the occurrence of some of the factors (Gant, et al. 1977) and Cooper (undated) identified as generally found in successful innovations by temporary systems such as systems interactions, communication and feedback, and self determination and flexibility.

The Model for Inservice Staff Development was a result of training experiences during Trenton's Cycle 10 project. The model uses change agents to guide school staff through a process of decision-making from determining the content area for focus and selecting the desired inservice strategies for internalizing the knowledge necessary to use and adapt the innovation (Walthew & d'Ambrosi, 1979). Through the use of this model, Wilson faculty were allowed the opportunity to be self-initiating, self-regulating, self-evaluating and to make decisions and execute plans within the bounds of their own resources.

Impacts can be analyzed as a combination of various types of change: the adoption of an educational innovation, the changing of a client system, the experiencing of a process by a client (Chin and Downey, 1973). The main effect of Trenton Teacher Corps Cycle 12 was the development of the faculty into a group capable of executing a change within itself, specifically, the planning and implementation of the Reading Comprehension Skills program.

Research Adaptation from a Literature Base

Information from the research literature provided the basis of the faculty development content in reading comprehension. This information served to validate the idea of comprehension skills in the eyes of the teachers, thereby increasing their confidence that this instructional approach would lead to better reading comprehension by pupils. The main source of information was the taxonomy of Reading Comprehension developed by Thomas Barrett (undated). He categorized reading abilities into four areas: literal meaning, inferential meaning, critical thinking, and appreciation. These categories were then subdivided into specific skills such as recognizing or recalling a comparison or predicting an outcome.

Research adaptation can be embedded in a staff development program employing steps such as : identifying staff development needs; determining the best combinations of inservice delivery strategies; analyzing contextual conditions, resources, and constraints; varying them when needed; examining related research which might help determine desired content and strategies; designing and using methods for collecting information to demonstrate effectiveness of the strategies; and modifying them according to feedback (Morris, et al., 1979).

The focus on attaining clearly defined outcomes through a collaborative process fostered significant impact on student reading comprehension achievement as well as the occurrence of change in the permanent system. The Trenton project provided the catalyst, guidance and some of the additional resources necessary to improve reading comprehension instruction at Wilson School through adjusting the environment and curriculum to benefit pupil achievement. Use of the research adaptation process appears to have played an integral role in the occurrence of these impacts. ■

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Does Inservice Training Relate to Student Academic Achievement?

BY ROBERT E. SPAULDING

Project:	San Jose State University/Alum Rock Union Elementary School District
Cycle:	10th & 12th
Site:	William R. Rogers Elementary School
Site Description:	Suburban project with as many as 20 college faculty members involved including Stanford R & D, and Far West Lab representatives. Computer documentation system developed.
Project Thrust:	To test the effects of training in models of teaching and classroom management.

In the San Jose State University Teacher Corps the entire faculty of a single elementary school was involved in varying degrees in an extensive series of inservice training over a four-year period. As previously reported, (Morris, et al., 1979) dramatic and desirable changes in the classroom behavior of pupils were observed over the academic years 1976-77 and 1977-78. The data supporting the assumption that the CASES-(coping analysis schedule for educational setting) based classroom management training (Spaulding, 1978) given to the teachers during the first three years was responsible for a variety of pupil and teacher behaviors. Here, relationships between student achievement and a number of presage and process variables are reported.

Evaluation Strategy

Since no control or comparison classes external to the project school were possible, the design strategy focused on measures of variations found to occur "naturally" in the target school classrooms. Indices of variation in teacher competence, motivation and involvement in Teacher Corps activities were created by asking project personnel who had personal knowledge and detailed records of the classroom and workshop performance of the 18 teachers in the project school (12th cycle) to rank-order the teachers along a series of continua such as "receptivity to training activities," "commitment to professional self-development," "participation in Teacher Corps workshops and training activities," "skill in classroom instruction," "skill in classroom management," and "overall

competence in the use of the CASES-based treatment schedules."

In addition, two indices of participation in Teacher Corps training activities were constructed from project records by counting the number of activities attended and the number of CASES-based feedback sessions and case studies each teacher experienced. It was hypothesized that variations in teacher participation, competence, motivation and involvement would correlate with measures of pupil performance in reading and math.

Influence Model

This model includes four major components — presage variables, context variables, process and product variables. The model identifies these variables and the method of measuring each as used in this study.

The analyses reported in this paper are intended to provide information regarding the following research hypotheses:

Hypothesis 1: Training in each of the three models of teaching (concept attainment, inquiry training, and synectics) will increase the use of elements of each of the models in the "natural" day-to-day teaching style of the teachers in the sample.

Hypothesis 2: The generalization of training in the three models of teaching to the natural teaching style of the teachers in the sample will occur in proportion to the degree of participation of each teacher in the Teacher Corps workshops and training activities.

Hypothesis 3: The presence of elements of the three models of teaching in the natural teaching styles of the teachers in the sample will contribute positively to gains in pupil reading and mathematics.

Hypothesis 4: Training in the CASES-based management and instructional styles (treatments) designed to match the social learning styles of pupils (Styles A,B,C,D,E,F,G & H) will generalize to the natural teaching styles of the teachers in the sample.

Hypothesis 5: The generalization of training in the CASES treatments to the natural teaching styles of the teachers will correlate positively with the amount of feedback received from observers and the number of case studies made using CASES methodology.

Hypothesis 6: The presence of elements of the 5 CASES- -based teaching styles (treatments) will contribute positively to gains in pupil reading and mathematics.

Hypothesis 7: Generalizations of elements of the 3 models of teaching (concept attainment, inquiry training, and synectics) and of the 5 CASES-based treatments to the natural teaching style of the teachers in the sample will correlate positively with indices of motivation, commitment to professional self-development, and overall competence in management and instruction.

Results

Hypothesis 1 — A test of the generalization of training in the use of the 3 models of teaching was made by comparing the STARS (Spaulding Teacher Activity Recording Schedule) coefficients for Discovery Style (concept attainment), Socratic Style (inquiry), and Transductive Style (synectics) obtained in all settings in 11 classrooms in academic year 1977-78 with the STARS coefficients for the same 3 styles in all settings in April of 1979. The differences were tested with a correlated *t*- test. The results of these tests show that small, but statistically significant, increases were found in the Socratic style. None of the other comparisons of STARS teaching styles were found significant. Hypothesis 1 is given very meager support. As measured by classroom observations (using STARS) on random visits, there is little evidence of generalization of training to the natural teaching styles of these 11 teachers.

Hypothesis 2 — Since Hypothesis 2 concerns the assumed linkage of changes in natural style to participation in Teacher Corps training activities, the only style to be examined is the Socratic instructional pattern. The results of this analysis indicated there was no relationship between the degree of participation in Teacher Corps workshops and micro-teaching sessions and the generalization of the inquiry model as measured by STARS Socratic Style coefficients in April '79.

The findings for the second index were more substantial. A positive correlation was found between the STARS Socratic Style and the index of the number of feedback sessions held and the number of case studies made in each teacher's classroom. This result suggests changes in a teacher's natural style are more likely to occur when training activities are related to the day-to-day in-classroom problems faced by teachers.

Hypothesis 3 — As in the second hypothesis, this one is conditioned upon the finding of training effects in the naturalistic teaching styles of the project teachers. The possible contribution of the presence of some elements of the Socratic Style in the naturalistic style of 5 teachers was examined by multiple regression analysis using reading and math scores as dependent variables.

The data indicated that elements of the STARS Socratic Style found in the natural teaching styles of 5 teachers in the sample did not contribute significantly to variance in reading and mathematics achievement. No support for the influence of training in the three models is provided by these analyses.

Hypothesis 4 — The fourth hypothsis concerned the possible generalization of training in the use of the CASES-based classroom management and instruction treatments to the natural teaching styles of the project teachers.

Two teaching styles were found to contribute a small amount of variance to MAT Total Reading. Style D Treatment (in teacher-directed settings) contributed negatively to the prediction of reading achievement and Style E (in teacher-directed settings) contributed positively. These findings do not provide substantial support for the hypothesis . The level of contribution to variance is also marginal. Further studies are needed to assess the influence of the CASES-based treatments on student achievement. It will be necessary to identify whether the teacher is matching the STARS treatment style used to the behavior characteristics of the pupils. The degree of appropriate matching of teacher treatment to student behavior style, rather than a sheer increase in the use of the 5 CASES-

based treatments, should predict student achievement.

Hypothesis 7 — This hypothesis was based on the expectation of generalization of training to natural teaching styles and predicted relationships between measures of elements of the 3 models of teaching and of the 5 CASES-based treatments (in the natural teaching styles of the teachers) and indices of motivation, commitment to professional self-development, and overall competence in management and instruction.

The data indicated only the teamleader was able to predict the generalization of training to the natural teaching styles of the project teachers. Her ranking of commitment to professional self-development, however, did not correlate with elements of the three models of teaching that were strongly emphasized in the workshops and micro-teaching practice sessions.

These non-significant findings for most of the indices may have been the result of the inability of project staff and the school principal to judge accurately, the motivation, commitment, and/or competence of the teachers *OR* they may accurately reflect the lack of a time relationship between these variables. In the case of the index of commitment to professional self-development created by the teamleader, her close association with the teachers prior to the project, may have permitted her to arrive at a more valid index.

Although the ranking was made during the first year of Cycle 12, the correlations found may reflect the teamleader's awareness of her colleagues' management and instructional skills at that time (after completion of Cycle 10 training) and not an independent assessment of commitment to professional self-development. Further research will need to be done to find out whether "a commitment to professional self-development" is, in fact, a necessary condition for inservice training in CASES-based treatment programs to generalize to the natural teaching styles of classroom teachers.

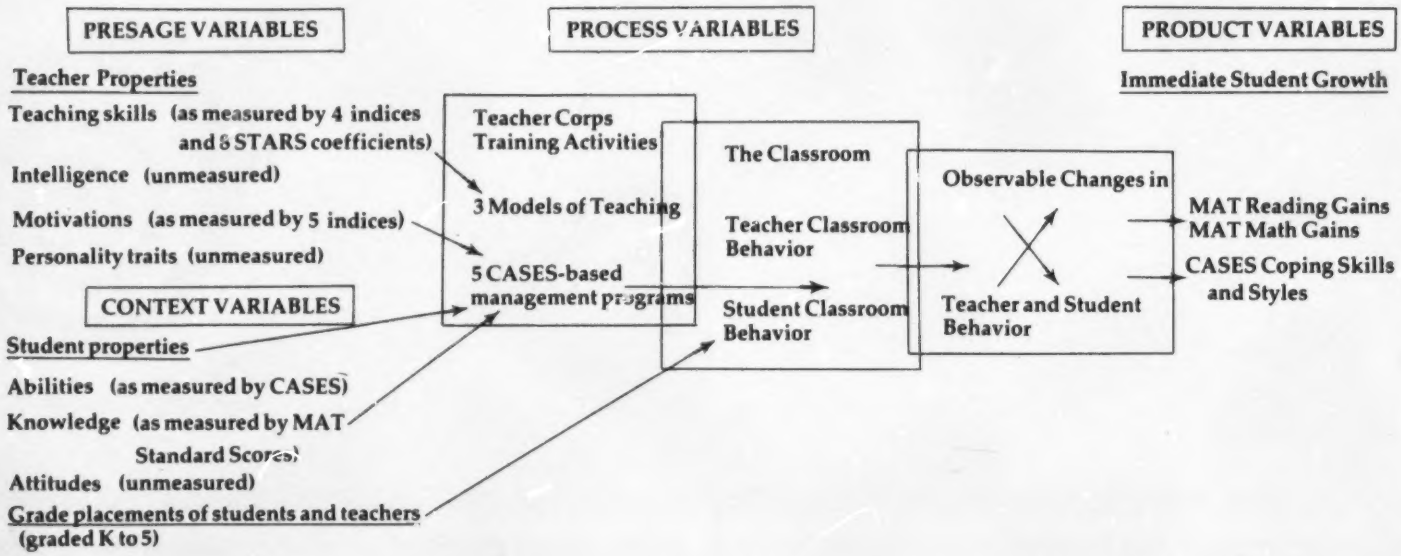
Results of these analyses provided support for the following statements:

1. Small, statistically significant increases were found in the Socratic Style of teaching in the natural teaching style of five project teachers one year after the specific training in the model was completed.
2. The number of on-site feedback sessions and case studies made correlated significantly with the degree to which elements of the Socratic (inquiry) Style were manifested in the natural styles of the teachers at the end of the project.
3. None of the measures and indices of generalization of training to the natural styles of the teachers were found to contribute a significant amount of variance to pupil achievement in reading and mathematics.

Figure 1

San Jose State University Teacher Corps (12th cycle)

Model of Hypothesized Influence (Path Analysis)



4. Among the several indices of teacher readiness to participate in Teacher Corps activities, only one was found to correlate strongly with teaching styles taught in the inservice training program. This one was the teamleader's ranking of her colleagues' commitment to professional self-development. Of eight teaching styles (or models) specifically emphasized in the San Jose State University Teacher Corps project and assessed with the STARS classroom observation system, scores for the 5 CASES-based treatment programs were found to correlate significantly with the teamleader's index of commitment to professional self-development.

These results, taken together, suggest the importance of assessing teacher motivation in any inservice training program and of gearing all training undertaken to the specific, on-the-job, individual needs of teachers. Close observation of classroom process, guided by teacher self-assessments of professional needs, and followed-up with one-to-one conferences providing specific feedback regarding daily management instruction, may provide the kind of support that will permit teachers to adapt or adopt new methods and procedures which will ultimately contribute to increased student growth. ■

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On Implementing and Maintaining Teaching Systems

BY GEORGE BRENT & DONALD ZIMMERMAN

Project:	Glassboro State College/Camden City Public Schools
Cycle:	10th & 12th
Site:	Forest Hill Elementary School (10th) Cramer Elementary School (12th)
Site Description:	Camden, New Jersey — 100,000, directly east of Philadelphia with 60 percent of population below poverty level, 7th poorest U.S. city.
Project Thrust:	10th Cycle — Precision Teaching — multicultural curriculum package — behavior modification course 12th Cycle — Direct Instruction — application of behavioral principles to increase academic learning

Precision Teaching, direct instruction and multicultural education were the major research adaptation thrusts of the Glassboro State College/Camden Teacher Corps.

Precision Teaching is a set of procedures for process evaluation. The heart of the approach is the use of procedures for daily measurement of target behaviors. Most often, a rate measure is taken (responses per minute) and students chart their daily progress on their own graphs. If the behavior requires an oral response, the teacher, aide, or another student will time a 30-minute performance each day when the student is ready. If the measure involves a written response, then a group might be tested at the same time.

A key to Precision Teaching is the pinpointing of learning objectives in terms of observable behaviors. Next, a way of measuring the rate of pinpointed behavior must be found, and finally, a charting procedure established. Assuming that key teaching goals have been identified by the measurement procedures, teacher and students are motivated by daily feedback on their progress (Becker & Engelmann, 1976).

Two target schools, Forest Hill and Cramer used Precision Teaching as a primary delivery system for teaching arithmetic facts. Teacher Corps developed and stocked an implementation manual for teacher use at the two schools.

Multicultural Education

The multicultural component was developed using many of Banks' (1975) concepts. Black, white, Puerto Rican, Native American and Japanese senior citizens explored concepts on aging, income, race, family and culture with students in classroom lessons. The approach was accommodated through a specially prepared learning kit, "Aging and Senior Citizens." Prepared by a small committee of teachers as their master's projects, the kit contained very specific, complete lesson plans and all support materials including children's story books, charts and graphs, filmstrips and other visual aids. In addition, neighborhood senior citizen homes were visited by the school children.

Direct Instruction

This technique is based on the work of Engelmann and his colleagues:(1) pre-tested scripted lessons, (2) use of teacher-directed group instruction for part of each lesson, (3) use of specified teaching procedures, (4) use of specified motivating procedures, (5) use of specified training procedures, (6) built-in systems for monitoring student progress, and (7) a common logic

in selecting teaching examples and program sequences (Becker, Engelmann, Carnine & Maggs, 1979). Direct Instruction is incorporated in nine DISTAR programs published by Science Research Associates (SRA). Cramer School used DISTAR first level reading, language and arithmetic kits.

Findings

Maintenance data were collected at Cramer a year after project completion and three years later, at Forest Hill (see Table 1). All teachers implemented the three approaches; however, after the project ended, implementation declined. Only 32 percent of the Cramer teachers continued with Precision Teaching but 100 percent of the Forest Hill teachers maintained this strategy. One hundred percent of the Cramer teachers continued Direct Instruction but only 20 percent continued the multicultural adaptation.

Precision Teaching, the major thrust of the project, in fact led to improved pupil performance. Preliminary data suggest Direct Instruction also improved pupil performance (McBride, 1979).

The multicultural component brought new perspectives. Classroom participation of senior citizens changed children's attitudes toward the elderly. Children sought their attention and enjoyed sharing their experiences with them.

Why Teacher Behaviors Changed

White (1973) indicated that program structure facilitated the acquisition of basic skills. He recommended that:

> *...a strategy of increased structure and management in the primary school classroom be used to increase the attainment of basic skills of reading and arithmetic. Increased classroom structure and management included: (1) a strong instructional emphasis with clearly stated and measurable goals, which are carefully sequenced; (2) ongoing assessment capability in the classroom; (3) individualized help after assessment; and (4) extensive planning by and careful supervision of the instructional staff.*

Structured programs aid trainers. Becker and Engelmann (1978) wrote that precision in specifying and training essential teaching skills is only possible within a structured teaching system.

In the Forest Hill School, Teacher Corps created a structure around behavioral principles (Precision Teaching) and multicultural studies. This required commitment and cooperation from college staff, teachers and the administration. The active leadership of the school principal was particularly important to curriculum development.

There are several possible explanations for the variations in the maintenance of project innovations. The number of teachers continuing Precision Teaching with arithmetic facts dropped considerably but remained at project level at Forest Hill. Two factors led to the decrease in the use of Precision Teaching at Cram-

Table 1

Implementation and Maintenance of Teacher* Behaviors

	Forest Hill (1975-77)		Cramer (1977-79)	
	Precision Teaching	Multicultural	Precision Teaching	Direct Instruction
No. of Experienced Teachers Originally Trained	30	30	36	5
Percent Implementing	100%	100%	100%	100%
No. Remaining	16	10	22	5
Percent Continuing Procedures	**100%	20%	**32%	100%
No.of Years	3	3	1	1

Note: *Data collected on project teachers still on 1979-80 school year staff.

**Procedures are being continued in a modified form.

Table 2

Summary of Pre-Post Test Analysis
Control vs. Experimental Groups

Grade	Addition	Subtraction	Multiplication	Division
4A	++ ≤.05	o ≤.0005	++ ≤.0005	++ ≤.0005
4B				++ ≤.001
5A	++ ≤.0005	++ ≤.003	++ ≤.0005	
5B	++ ≤.0005	++ ≤.05	+++ ≤.0005	
5C	++ ≤.03	o	++ ≤.003	

Level of Significance ≤.05, t test

No significant difference on Pre-Test	13 (65%)
Control Superior on Pre-Test	1 (5%)
Experimental Superior on Pre-Test	6 (20%)
	20

Post-Test (No Significant difference on Pre-Test)

++ Experimental Significantly Superior to Control	11 (85%)
o No Significant Difference (Control vs Exp)	2 (15%)
	13

Post-Text (Controls Significantly Superior on Pre-Test)

+++ Experimental Significantly Superior to Control	1 (100%)
	1

Post-Test (Experimental Groups Significanty Superior on Pre-Test)

+ Experimental moved further ahead	5 (83%)
— No Significant Difference (Controls caught up)	1 (17%)
	6

er — lack of supplies and lack of support from the principal. On the other hand, Forest Hill not only had supplies but also a supportive principal who demanded daily fact drills and advocated Precision Teaching.

Without encouragement teachers in both schools stopped charting student data. Unfortunately, charting is the heart of the Precision Teaching approach and a sophisticated measure of pupil learning is lost when charting ceases.

At Cramer, Direct Instruction not only continued after the project but expanded. It may have survived because it provided a small group approach to meeting individual needs as well as complete instructional materials. Teachers found Direct Instruction techniques compatible with existing grouping strategies and the materials to be far superior to those in use. Direct Instruction continued even without a high level of administrative support. The number of teachers at Forest Hill continuing the planned lessons from the package, "Aging and Senior Citizens ", was maintained at virtually a 100 percent the first year following departure of the college team. However, the loss of charts and support material led to the discontinuation of multicultural instruction at Cramer.

Conclusions

1. Implementation of curriculum development is facilitated if each individual is adequately prepared to use new materials in the classroom.
2. Significant impact requires continuous involvement and support of the principal.
3. Continued involvement of university faculty also facilitates change.
4. Teachers can also serve as effective inservice leaders with strong administrative support.
5. Structure minimizes laborious teacher planning and also facilitates change. ■

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Changing Teacher Behavior = Changed School Climate

BY WILLIAM O. PRICE, Jr.

Project:	Murray State University/Hopkinsville Middle School
Cycle:	10th
Site:	Hopkinsville Middle School
Site Description:	Rural Kentucky project where one-third of student body were from low-income or minority families. Total students enrolled, 600. Nine university faculty were involved with the project.
Project Thrust:	To identify childrens' unique talents and to maximize them.

The Murray State project was based on research findings related to the separate components of intellectual skill. It was designed to explore the impact of the multiple talent approach to teaching students and teachers. The approach, proposed by Taylor (1973) includes several intellectual factors in addition to the general school goal of increased academic skill. These factors include decision-making, planning, forecasting, creativity, and communication.

The Hopkinsville Middle School project, was organized around the following set of principles: (1) almost all children possess unique talents of a high order, (2) these talents can be identified, (3) these talents can be enhanced, and (4) success in one school endeavor can lead to increased success in others. The two-year program systematically developed these concepts into a practical school program. Teacher-pupil roles in such a program were clarified and accepted, and appropriate materials and teaching strategies were developed in a cooperative effort on the part of college and local school faculty.

Identifying Talents

The middle school and university staff members

reviewed extensively the testing materials available and selected the Biographic Inventory (BI), Form 'T' as the primary measurement instrument. It produced measures in six areas: academic performance, vocational maturity, leadership, artistic potential, educational orientation and creativity. Scores on the Comprehinsive Test of Basic Skills Form 'Q' were also available for use both in talent identification and as a student outcome measure.

In addition to the Biographic Inventory, a battery of teacher-administered, hand-scored tests were given to the experimental sample at Hopkinsville Middle School. These measures included assessment of students' ability to consider consequences, planning and organization, flexibility and originality, and problem solving.

Teachers were provided with a computer printout of the data generated through the BI and the talent battery. Data showed marked differences occurred when an individual's performance was measured over an increased range of intellectual endeavor. In fact, many students ranged from extremely high (above the 90th percentile) to extremely low (below the 10th percentile) as one considers the full range of test scores presented.

Using these data, teachers prepared "Talent Profiles" for each student in their advisory group, and students were advised of their talent strength areas in individual counseling sessions. Students soon learned to expect to be given the opportunity to work in these strength areas in each of their classes. Teachers had data indicating almost every student had above average ability in at least one significant area of intellectual endeavor.

Ninety-one per cent of the student population was above the 50th percentile, "above average", in at least *one* of the identified talent areas. Also, 47 percent of the students scored at the 90th percentile — near the "gifted" range — in at least one of the identified talent areas, and that almost one-fourth of the population was shown to be extremely able in two such areas.

Further examination of the data indicates only 2 percent of the students scored above the 50th percentile on all ten areas, and no student scored at the 90th percentile on more than seven of the ten areas. Thus, data are *not* being inflated by a small group of extremely able students. This supports a basic tenent of multiple talent teaching. Not only are there areas of high ability for almost every student, but no student is uniformly capable across *all* important factors of intellectual performance (Ellison, Abe & Fox, 1977).

School Climate

In *Evaluating Programmatic Impact in Education*, Dick (1976) notes the frequent difficulty in distinguishing between formative and summative evaluation process in Teacher Corps projects. This happens because evaluation data is often used in both the developmental stages as well as when determining ultimate effectiveness. This was particularly true of the MSU/Hopkinsville evaluation component related to the measurement of improved school climate. The Student Activities Questionnaire, Form II (SAQ) was adapted for use at the junior high school level and was given to all students at the target school at pre-determined intervals. A control group of approximately 175 students was identified at a neighboring junior high school. These students were also given the SAQ at the beginning and end of the two-year 10th cycle. In addition to instruction, inservice, and developmental activities related to multiple talent teaching, teachers at the target school were provided with SAQ feedback data as they related to their specific classrooms. Teachers in the control group were not provided this feedback.

School Climate Instrument: The SAQ

The Student Activities Questionnaire is designed to assess classroom climate as perceived by students within the classroom. Students responded to a 65-item questionnaire (mainstreamed LD students had the items read to them) and described specific events and behaviors occurring in the classroom. The educational processes measured by the SAQ are relatively free of such variables as socioeconomic status, race and sex (Ellison, Nelson, Abe, Fox & Coray, 1975). SAQ score areas include: (1) Individualization of Instruction, (2) Development of Career Talents, (3) Reinforcement of Self-Concept, (4) Classroom Participation, (5) Enjoyment of Class, and (6) Teacher Expectations. The SAQ provides climate information on a classroom level; however, individual student-reported data proved quite valuable in helping teachers make meaningful adjustments in teaching styles, materials, strategies or evaluation techniques.

The SAQ was given to the experimental and control schools at two different times. Resulting data show there was a significant improvement of school climate in the experimental school when compared to the control school in five of the six SAQ score areas. The most marked change in either school was related to individualization of instruction. Students in the experimental group were more involved in activities which were designed to meet their specific needs. They also perceived a change in classroom atmosphere; they were free to speak out, to take part in class, and to share ideas. Students saw that their teachers were taking greater interest in them as individuals and were helping students to think of concepts learned in relation to lifelong goals.

These data indicate there were significant gains in three of the six areas, notably, individualization of instruction, development of career talents, and reinforcement of self-concept. Ellison, Abe and Fox (1977) note the lack of significance of the Teacher Expectations score, claiming it reinforces intuitive findings of an early site visit — with project staff concurring — that teachers initially had quite a negative attitude about the capabilities of Hopkinsville students. This attitude was reflected in students' perceptions that teachers did not expect them to work hard or learn more.

Other Measures of Student Outome

The Comprehensive Test of Basic Skills (Form Q) is administered to students in the target school district each spring, but complete data on the control school were not available to project staff. A gain of at least one grade level (between spring '76 and spring '77) was evident in all areas except Language Mechanics. A

comparison of scores of eighth grade students at HMS with 1975-76 norms for the state of Kentucky shows HMS students compared favorably with state norms in most areas. The differences in the study skills areas seem quite large. These data suggest expanding the curriculum to include learning opportunities in areas other than traditional academics will *not* result in a decrease of student performance in basic skills. In fact, large gains in student scores were produced in areas related to study skills and research/reference skills.

Observations of Teacher Change

Data generated through the SAQ offer a convincing argument that several changes occurred at Hopkinsville Middle School during the Teacher Corps project. Children liked school more, thought they were doing more interesting things in class, and performed satisfactorily on basic skills tests. To undertstand what occurred, it is necessary to comment on some of the things that began happening at Hopkinsville Middle School that were absent before the staff began using multiple talent teaching strategies. A decision was made at the outset of the project that classroom observation systems would not be used to gather data or information relative to change. This was mandated by the teachers and the principal. Before the project ended, teachers were videotaping their classes and each other's classes; they set up teaching teams in some departments; and the principal spent one morning a week visiting and observing classrooms.

Teachers began to explore different ways of structuring their classrooms. The use of talent categories in teaching all subjects meant some way had to be developed to break away from using all large-group activities in the classroom. Teachers were given information about student talents; the students were told about their talents and so were their parents. HMS went from a school in which no one used learning centers to a school in which many, in fact most teachers, used learning centers. Teachers not only gained skills in developing multi-activity classrooms, but they used those skills, and took pride in their ability to do it. The school went from having the worst attendance record in the district to having one of the best, although moving from the oldest building in the district to a new facility during the second project year probably had an effect on attendance and school pride.

The School Steering Committee, a faculty means for systematic study and evaluation of the school program was perhaps one of the most significant products of the project. Teachers in that school knew what the curriculum was and how to change it if they desired. They knew the value of planning and how to plan, individually or with others.

To describe the overall impact of this project on the Hopkinsville Middle School is impossible without also considering a variety of other school changes. Administrative structure changed, as well as role perceptions of administrative and supervisory personnel. The school library changed from a book repository to an exciting, multi-talent development center for students. A voluntary parent tutoring program was implemented. Students, teachers and principals at Hopkinsville Middle School now take pride in something at their school besides the football and basketball teams.

Multiple talent testing at HMS showed that the vast majority of students had better than average ability in one or more worthwhile intellectual areas. The teachers, for the most part, accepted this and developed programs to provide students the opportunity to build on these skills. Students responded to these increased opportunities and, as data indicate, began to view their teachers and their school in a more positive light. Almost 20 years ago, Benjamin Bloom predicted this scenario, and wrote (1963):

> *...The consequences of teachers' viewing each individual as possessing unique talents of a high order (in contrast with viewing only a small group — perhaps 10 percent — as having a high generalized ability) are quite profound. The teachers' appreciation of the unique merits of each child could have important consequences for the way in which the student and teacher interact as well as for the ways in which the teacher might try to help each student in the learning process.* ■

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Section II

Teacher Corps Research Adaptation Cluster (RAC) projects were developed and funded to respond to two interrelated needs in teacher education. To begin with, school practitioners need to acquire and use research knowledge to solve educational problems confronting them in their classrooms. On the other hand, university practitioners need to apply research and theory in the design and implementation of more effective teacher preparation programs. The five papers excerpted in this section have their primary foci, therefore, on the impact of RAC projects in relationship to these two broad issues. The authors have responded retrospectively and introspectively to parts of the following question:

- *What have the RAC projects done (or tried to do)*
- *To impact on whom*
- In the preservice and inservice *professional development* of teachers to improve school practice
- and *how*

Britton's paper is an account of the impact of an inservice professional development strategy on teacher behavior and student attitudes. His strategy has three essential ingredients: a theory based innovation (Mastery Teaching); iterative field based training which accounts for teacher attitudes as well as their individual entry skills; and development of materials for classroom use. The data describing the impact of the strategy came from structured interviews of both teachers and administrators who had gone through the training. They show positive effects along several dimensions, e.g., better organization of instruction, improvement in both teacher behavior and student attitudes, and improved classroom climate.

In Richey's paper, we find a thoughtful study of how classroom teachers' involvement with one particular RAC project has influenced their "continuing professional development" after the project terminated. The author collected data on three major sets of variables: personal and professional profile data, project involvement, and postproject professional development. Project involvement was measured by credit bearing university courses and non-credit workshops as well as participation or membership in three different kinds of inservice group efforts, i.e., a professional development committee, a program on how to conduct inservice workshops and an educational specialist program. The latter was measured in terms of formal education, informal learning, demonstration of competence and career expansion. The major conclusion drawn from analysis of the data shows that the nature and scope of teacher involvement with a project does affect his or her continuing professional development.

Richey's study is significant because it adds the concept of career expansion to the theory of professional development. This adds consideration of the personal and professional needs and interests of the practitioner to the school and classroom needs when planning inservice programs.

Both the Britton and Richey papers further show university inservice efforts are able to respond to important professional development variables in the school and the teacher culture. While Richey's findings demonstrate the importance of providing for the teacher's personal career expansion needs, Britton's paper illustrates how one university effort could be built around the needs of the practitioner for hands-on skills and materials relating more immediately to the day-to-day instructional problems in the classroom. Findings from these two papers suggest that higher education institutions can be flexible in the design and delivery of inservice programs. Policy makers (university deans of education, for example) should find ways to nurture such flexibility.

Acheson undertook a compilation and analysis of project directors' "impressions" of impact on university faculty and programs. His analysis yielded some positive conclusions: given the right incentives, professors do go out into the world of the school practitioner; professors are able to learn to be responsive to the needs of that world; during the life span of the projects, "professors did some new things *out there* which had an impact on them;" and their programs have expanded in content and the procedures for delivery of services have improved.

These same impressions leading Acheson to these conclusions tend to describe a faculty culture appearing to value or thrive on what Clark (1977) has labeled as the "ad hoc service relationships" with the public schools. These relationships are often more private entrepreneurial arrangements than manifestations of a deliberate planned institutional effort to improve practice.

The Arends-Lovell paper examines how one theory based change strategy was employed to impact a school of education with little success. It describes an effort to build a new preservice secondary teacher education program; it was initially shaped and then reshaped by a host of historical and political forces from both within and outside their institution. Three change models (or "theoretical perspectives") guided their developmental and implementation activities: Planned Organized Change, Organizational Development and Research, Development and Diffusion. After four years, some impact resulted but only on the micro level, e.g., more integration of curriculum contents and decisions in terms of an overall set of program goals for secondary education and increasing effort on the part of its faculty to team. On the macro level, however, there was no major shift in the way secondary teachers were trained nor was there a significant increase in the length of the professional training sequence.

Their analysis of the reasons for the difficulty of impacting more extensively within their school of edu-

cation suggests the need to know more about how change takes place in higher education and, also, how universities function as organizations. Olive (1968) hypothesized existing theories of organizational behavior and administration may not be appropriate for the study of the university. Her words were:

> *Governmental agencies and business corporations have an internal organization which is unlike that of the university. Among the differences. . . are . . . : the goals of the university are not specific and clearly defined; the product or service produced is not tangible; the customer (student) exerts limited influences; the employees (faculty) are dedicated to their specialized fields, not the employing institutions; and the decision-making process is diffused in a way not typical of other forms of organizations. Such differences suggest the inadequacy of present theories on problems of university administration . . . .*

A recent study of the university by Cohen, March and Olsen (1972) provides a conceptualization of it as an "organized anarchy". It is an illuminating way to look at our institutions. Their findings show universities consistently display such anarchic characteristics as ill-defined preferences (i.e., fuzzy goals), unclear technology (i.e., their own internal processes are not easily or clearly understood by their members), and fluid participation (i.e., actors in decision roles frequently change or devote varying amounts of time and energy to decision-making). The Arends-Lovell case study mirrored one such anarchy.

Their case study also points to a realistic change or implementation model for use in higher education settings —conflict and bargaining. Elmore (1978) describes this model as one consisting more logically of a complex series of bargained decisions; these decisions would reflect the preferences and real resources of the actors (or turf owners) within an organization. Arends-Lovell's change effort experienced precisely such bargained decisions toward the end of their four-year odyssey.

Childress' paper describes how his university's project in Appalachia has impacted both teachers and students in the target school as well as his university programs and faculty —sometimes in ways not expected. His effort testifies to the difficulty of monitoring a two-year adaptation project for impact information. This is particularly true when you consider this project had to design a complex professional development model to be installed in a remote rural location containing three disparate components: a nontraditional field based graduate elementary education program; an inservice staff development effort; and a technical assistance thrust.

His analysis of the project's experiences concludes that impact information from a complex project might best be collected—not in the form of formal test results—but from "careful monitoring and recording of events in the field where instruction and goal behavior occur." Childress is saying what we need is to collect naturalistic data. He is suggesting, therefore, the case study approach to documentation of impact. This implies such information would be more useful and relevant from the perspective of program development and management.

Impact of research adaptation efforts through professional development appears not to be an easy phenomenon to describe and assess. The more ambitious or the more complex efforts seem to yield impact that can be captured impressionistically or appears more in process terms.

The organizational or the environmental contexts remain the ultimate crucible. As a function of research adaptation, professional development to improve school practice should best be described and assessed in terms of what it has done (or could have done) to enhance school improvement. The papers excerpted in this next section have all made useful contributions in this direction. ■

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Effecting Continuing Professional Development of Teachers

BY REVA C. RICHEY

Project:	The Wayne State University/Detroit Public Schools Teacher Corps
Cycle:	12th
Site:	Murray-Wright High School
Site Description:	3,500 students, grades 9-12 Highest poverty area in Detroit with a primarily black student body. Total staff — 159 13 departments and 2 buildings.
Project Thrust:	—Vocational Education —Basic Skills —Effects of Teacher Behavior on Pupil Achievement —Competency-based Education

Note: Site description based on 1978-79 data.

During the teacher shortage periods in American education, the major thrust was on the preparation of new teachers. As the social structure changes and school environments diminish, the emphasis is turning to the development of those teachers currently employed. At this time, staff development has become a major interest of not only the institutions of higher education, but also of the local school districts, and the professional organization.

This interest, shared by many, has resulted in an increase in the number of staff development activities available, and often required, of the classroom teacher. Development activities are taking a variety of formats and are increasingly becoming a means of solving the very practical problems of the teacher. Teacher Corps projects across the country represent one attempt to provide systematic, longitudinal staff development programs.

Methods of determining the effects of these many efforts, of course, varies. Most would agree that the ultimate impact should be related to improvement in the knowledge, skills, and attitudes of students. While this is seldom argued, few staff development programs are actually examined solely on the basis of resulting student achievement. Perhaps this reluctance is not merely from the lack of time, resources, or methodological skills, but is actually a recognition that the dimensions of the problem are, in fact, broader than considerations of only student achievement.

This paper describes an attempt to examine the effects of a Teacher Corps project on the continuing professional development of the teacher. Teacher educators have long hoped to encourage teachers to continue as students of education even as they work as practitioners. Staff development activities have the potential of drawing a teacher into further experiences, such as advanced degree programs, short term school supported activities, or involvement in professional organizations. Assuming participation in these experiences eventually leads to increased teacher proficiency and ultimately student gains, the variable can be legitimately used to determine the impact of staff development.

The Detroit Teacher Corps project included a two-year staff development program for Murray-Wright High School teachers. It was completed June 1979, and there has been no further Teacher Corps involvement in the school since. The underlying question is *What was the impact of Teacher Corps staff development activities upon the participating teachers in terms of their continuing professional development?*

Professional development can be viewed in a variety of ways. For the Detroit project, professional development encompassed *formal education, informal learning* (e.g. reading and conference attendance),*demonstration of competence* (e.g. leading workshops and implementing change in the classroom), and *career expansion*. These variables will be explored and discussed here.

Collecting Impact Data

In an attempt to answer the question concerning the impact of Teacher Corps staff development activities upon participating teachers, an instrument was constructed to gather data. It was divided into five sections:

1. personal profile data
2. professional profile data
3. professional development activities *before* Teacher Corps
4. involvement and impressions of the project, and
5. professional development activities *after* Teacher Corps

The instrument design was based on several assumptions. These included:

1. Teachers have many personal (as well as professional) responsibilities and pressures which affect the amount of staff development in which they can participate.
2. Many teachers are already participating in professional development activities before their involvement in a formal project.
3. The amount of project impact often depends on the *degree* of project involvement and the teacher's perceptions of that project.

The instrument was distributed to teachers who had participated in some phase of the project's inservice education component during the two previous years. Two teachers volunteered to distribute and collect the completed instruments.

Of the 159 persons on the 1978-79 Murray Wright

staff, 92 had participated in some phase of the inservice component. Of the 92, 72 persons were still on the Murray-Wright staff this year. Sixty-five percent of these persons returned instruments. These 47 instruments are the source of data used to measure the professional development impact discussed.

Summary of Results

The typical respondent was:

a. female, white, 36 years old
b. married, with one or two children

She had:

c. a permanent Michigan teaching certificate
d. 10 years of teaching experience
e. a master's degree with a few extra hours

During the Teacher Corps project she:

f. received 11 quarter hours of university credit
g. attended three non-credit workshops (averaging 7.64 clockhours in length)

She is probably now:

h. enrolled in a program at Wayne State University
i. hoping to assume new job responsibilities

This respondent is typical of the average project participant.

In general, one can conclude from the data that *the higher the level of involvment in the Teacher Corps project, the greater the amount of professional development activities after the project ended*. The degree of involvement in the project did *not* correlate with pre-project professional development; however, this needs to be examined in more detail.

The level of project involvement was measured by:

- *The number of credit hours received for participation in the project inservice activities.*
  University credit was granted for successful completion of the majority of the project's inservice work. A total of 1,205 quarter hours of credit were earned, averaging 11.14 hours per participant. The average length of these credit experiences was 27.67 clock hours (Richey, 1979).
- *The number of non-credit workshops attended.*
  Twenty-four non-credit workshops were conducted during the project. The average length of each of these was 7.64 clock hours (Richey, 1979).

In addition, there were three major groups to which MurrayWright teachers were likely to have joined during the project:

- *The Professional Development Committee* (a group representing the 13 departments in the school, serving as a liaison between the project and the Murray-Wright faculty).
- *Conducting Inservice Workshops Program* (a credit-producing program of either one semester's length, or a full year in length, which trained classroom teachers to plan and deliver inservice to their colleagues).
- *Educational Specialist Program* (an intensive program which provided core instruction of an educational specialist certificate, consisting of six complete courses, 24 quarter hours).

These five variables were included in determining the level of project involvement.

Professional development variables measured included:

Formal Education

—The number of Wayne State University courses taken
—The number of non-Wayne State University courses taken
—University Program status
—Future educational plans

Informal Learning

—Amount of professional reading (not connected to university assignments)
—Number of professional conferences attended

Demonstration of Competence

—Number of presentations/speeches given at professional meetings
—Number of professional papers or articles written
—Number of workshops led
—Number of changes made in teaching techniques

Career Expansion

—New job responsibilities
—Future job plans

Figure 2 summarizes the significant correlations between these two general categories of variables. These data show that the best predictors of future professional development are: (a) the amount of credit received in the project and (b) involvement in the special program training teachers to be inservice workshop leaders. (A detailed discussion of these variables can be found in the complete edition of this paper, Richey, 1980).

Impact Results

These results relate to a project in a large urban high school. They are most interesting when taken in the context of Mann's position that *the higher the grade level, the more resistant to training was the teacher. No project was able to have any impact on a high school* (1976). There was an impact in this situation.

Primary impact on the continuing professional development of teachers appears to stem from an intensive involvement in an inservice program with university credit as the tangible incentive. This is not an uncommon approach, especially with Teacher Corps. Joyce, *et al.*, labeled this as credential-oriented, seeing it as typically not relevant to teacher needs (1976). Edelfelt, on the other hand, sees credit related staff development systems as an advantage (1977).

These results tend to agree with Edelfelt. The non-credit formats had little impact. Those who participated on the Professional Development Committee (typically seen as a genuine level of total involvement) showed little evidence of continuing development activities. Participation in non-credit workshops showed some impact; however, this seemed to be an age and experience related factor. It may be generalizable for only one segment of the population.

In general, the most impact was upon those who

participated in credit-producing activities. Some might find this unusual with a population of high school teachers, who typically have a more advanced degree than the elementary or middle school teacher. But looking at the respondents, their degree status was as follows:

Degree	Number
Associates Degree	2
Bachelor's	15
Master's	11
Master's + 15	8
Master's + 30	5
Educational Specialist	2
Doctorate	1
Other	1

Forty-two percent of the respondents did not have master's degrees. When one considers that 24 percent did not have regular Michigan teaching certificates, it is clear that there are a number of persons who need university credit to maintain their job status. Many of these are experts in a vocational area of specialization who have turned to teaching. They may have a bachelor's degree in nursing, for example, but no teacher education experience, and teaching in a health occupations program.

There was another category of persons who began pursuing higher degrees, apparently as a mechanism to gain increased responsibilities on the job. This could be one reason for the success of those parts of the inservice component which could be related to career expansion. Both those in the Educational Specialist Program (which was not planned by project staff until requested by participating teachers) and the program on Conducting Inservice Workshops led to the acquistion of new skills which are not typically in the repertoire of the classroom teacher.

One could question whether career expansion topics of staff development would have the same impact when dealing with a group of elementary teachers. Experience with high school populations seems to indicate that rather than being a function of teaching level, these topics are more appropriate for older groups with more experience in education. Persons who already have the traditionally required degrees look to other types of incentives, and probably increased steps on the pay scale are not sufficient incentive to engage in long-term programs which require a large time commitment.

The profile characteristics of this project's participants do interact with continuing professional development. McLaughlin and Marsh (1978) identify only three teacher characteristics which had a major effect on the outcomes of a staff development project. The number of years of teaching experience was one of these. They cited the Rand Change Agent study as concluding that the more experienced the participating teacher, the less successful one could expect the training to be, and the fewer improvements one would be likely to see in the students of those teachers. This statement has been supported by the results presented here.

However, age does *not* have the same effects as experience in education. Some forms of professional development activities require access to opportunities, and it appears such access is enhanced by age. Teachers who are asked (or who take the initiative) to write papers tend to be older. Teachers who are given the opportunity to make presentations at meetings are usually older and more experienced. As such, older groups of teachers are not necessarily resistant to change; however, the type of program incentives need to be varied.

What is perhaps more interesting is the negligible impact of the number of small children and other personal responsibilities upon continuing professional development on this group as a whole. The old adage "If you want something done, go to a busy person" seems to be holding true. Teachers with a large number of other concerns in their lives, nonetheless, have spent a great deal of time in Teacher Corps activities, and many are continuing to be involved in professional growth.

In relation to critical project delivery factors, Mann (1976) identified the diminishing influence of the principal on high school teachers. In this project, when administrative support questions were put in terms of the *immediate* administrator, i.e., the department chairperson, some influence is evident. However, the influence has impact upon reactions to the project itself and not upon the *impact* of the project, at least in terms of continuing professional development.

On the other hand, the issue of released time impact appears to be consistent whether the project is situated in a high school or an elementary school. Joyce (1976) notes that teachers prefer inservice on a released time basis, and these results show that when there is some released time there is more likely to be resulting changes in classroom teaching techniques.

Summary

Staff development programs, using a two-year Teacher Corps project as an example, *can* have an impact on the continuing professional development of teachers. Such impact is dependent upon the extent of initial active involvement in the project.

If project leaders are concerned with ultimate impact in staff development it seems important to:

1. Create situations which demand long-term involvement ;
2. Provide credit and advanced degree opportunities for the participants, unless;
3. The group is older, and then credit for the inservice is not as critical;
4. Include career expansion types of training, especially if the population already has the basic formal degress required for the position of classroom teacher; and
5. Provide a supportive school administration and university faculty.

Figure 2

A Summary of Significant Correlations Between Project Involvement Variables and Post-Project Professional Development Variables

Project Involvement Variables	Professional Development Variables											
	WSU Courses Taken	Non-WSU Courses Taken	University Program Status	Future Education Plans	Professional Reading	Professional Conferences	Presentations Given	Papers Written	Workshops Led	Classroom Changes	New Job Responsibilities	Future Job Plans
Project Credit Received	X				X	X			X	X	X	
Non-Credit Workshops					X				X			
Professional Development Committee												
Conducting Inservice Workshops			X		X	X		X	X		X	
Education Specialist Program			X						X			

Ultimately the best way to increase the possibilities for continuing professional development of teachers after a project ends is to present quality inservice programs which meet the needs of teachers. ■

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Impact of Mastery Teaching on Teacher Behavior and Student Attitudes

BY RONALD B. BRETTON

Project:	Indiana-Purdue University/Indianapolis Public Schools
Cycle:	11th
Site:	Indianapolis Public School No.71
Site Description:	Urban inner city elementary school with about 700 students (K-8), 99 percent black. Most students came from low income, housing project families.
Project Thrust:	To systematically adapt two research efforts: the NIE sponsored Far West Lab Instructional Purpose research; and the National Teacher Corps sponsored Mastery Teaching. The two most important goals stemming from these were (i) to field test materials, and (ii) to provide outcome oriented inservice.

During the second year of the 9th cycle Indiana University Indianapolis Teacher Corps, TC/Washington funded an effort to develop a set of mastery learning materials. We were asked to participate as the test site for the materials development which centered around Bloom and others' (1971) concepts of mastery learning.

The early field test results during the 11th cycle Teacher Corps program indicated the Mastery Teaching approach was a viable strategy for further inquiry into appropriate teaching-learning behaviors. Okey (1975) concluded that in every instance the pupils in the mastery group surpassed the non-mastery pupils when the teacher followed the mastery plan. The early training program involved teachers at different sites for only a few weeks while the 11th cycle research adaptation effort identified the effectiveness of Mastery Teaching as a development strategy involving an entire school staff.*

Mastery Teaching Impact

The primary impact of Mastery Teaching was reflected in teacher preparation and delivery of classroom instruction. Teacher preparation included development of mastery units taught in the classrooms. The units included behavioral objectives, criterion levels, formative and summative evaluation measures, and learning activities for pupils. These units were structured to improve teacher diagnosis of pupil learning difficulties and to design corrective measures when needed. Prior to the training, these teachers were less aware of the organization of their teaching and related behaviors.

Another impact accompanying staff development was the change in student attitude toward learning. Teachers reported that students were more motivated toward learning, were more self-confident, and generally happier. More than half of the teachers reported discipline problems were reduced after they used mastery techniques in their teaching.

Impact Data

The most substantive data from which the research adaptation impact generalizations were drawn was from a teacher conducted study. The teacher, Diana Mason, participated in the Mastery Teaching training and also assisted other teachers in unit development and classroom usage. Mason's (1978) study was to determine whether Mastery Teaching maximized the potential for teaching and learning. She also tried to determine if Mastery Teaching resulted in a positive attitudinal change in both teachers and students.

A set of questions were developed and Mason conducted structured interviews with 15 teachers (two of whom were administrators) who had completed the Mastery Teaching training process. The major findings of Mason's spring 1978 study indicate that as a result of Mastery Teaching:

1. teachers were more organized and their teaching format was better
2. some students were more confident and motivated to learn
3. some students seemed to learn more
4. some students seemed to retain information longer

Conditions Associated With Impact

Perhaps first and foremost in discussing possible impact related elements is the theoretical framework underlying the Mastery Teaching materials. Bloom et al. (1971) stated that as educators we have used the normal curve for so long that we have come to believe in it. We proceed in our teaching as though only a minority of our students should be able to learn what we have to teach. He further suggested that given enough time, 90 to 95 percent of all students can learn a subject with a high degree of mastery. This is contrary to assuming that students are distributed in their ability similar to the "normal" curve.

Although Bloom is the individual most noted for Mastery Teaching many others have been influential in elements associated with practical components such as behavioral objectives, task analysis, criterion referenced testing, and diagnostic-prescriptive teaching (Block, 1971; Block & Anderson, 1975; Mager, 1968; Popham, 1970). Bloom, Hastings, and Madus (1971) encouraged teachers to use formative evaluation mea-

* The terms staff development and inservice training are used interchangeably in this report.

sures so learning difficulties could be identified prior to the usual summative testing. The Mastery Teaching materials include sections on identifying and sequencing objectives, developing evaluation measures, identifying learning difficulties, and prescribing instruction.

Clark (1978) interviewed teachers who were being trained in Mastery Teaching without the assistance of staff trainers. This group was small in number (7) and included junior high school teachers. The trainer variable was removed to determine if Mastery Teaching skills could be attained and implemented using just the training materials. This practice was abandoned because teachers in this group were dissatisfied with only training materials. Clark reported they began to seek assistance from peers who received group instruction by an experienced trainer. Three participants did not achieve the mastery goal in their teaching.

Another study was conducted to find the extent to which the teachers in Okey's (1975) developmental training were using the skills learned. Half of the teachers and interns from Okey's previous study were available for interview. Marks (1976) reported the teachers' retention of the philosophy and practices of Mastery Teaching was almost identical to Okey's scores two years ago. However, teachers reported on a questionnaire that generally, they omitted at least one of the essential elements associated with mastery. A very cautious generalization is that the materials used in Mastery Teaching may aid in skill development while the intervention of a trainer is needed to insure implementation in the classroom.

The importance of long-term onsite assistance or field -based programs is mentioned as a very important variable by a number of field-based program experts (Schroeder & Price , 1977; Barnes, Putnam & Wanous, 1979; Pine, 1979; Richey, 1979). McKenna (1978) reported that developers and trainers need to attend more to the concept of work *with* rather than *on* teachers. It is proposed that the impact of Mastery Teaching was a factor of emphasis that was placed on working with the teacher's using their daily concerns of creating optimum learning conditions for their students.

Related Mastery Learning Research

Walberg, Schiller & Haertel (1979) reported in Phi Delta Kappan that of the 30 mastery learning research efforts studied, 97 percent reported positive results. They found that mastery learning also showed results consistently superior to conventional instruction on achievement, retention and attitudes.

Hyman and Cohen (1979) reported conclusions from research on 3,000 schools who used mastery concepts in math and reading. A few of their conclusions are:

1. learning-for-mastery is consistently more effective than traditional curricula;
2. learning-for-mastery learners achieve more objectives during a given period compared to students in nonmastery learning classrooms;
3. most teachers are easy to train as learning-for-mastery classroom managers;
4. Bloom's "time on task", (Hyman & Cohen, 1979) and our 'P' ratio (a measure of student participation in learning) are increased through instruction.

It is proposed that the impact of Mastery Teaching training on teacher behavior and student attitudes was the result of the interactions of several variables. There is some speculation in identifying the percentage of impact contributed by such variables as:

— the mastery learning theory base
— extended field-based training
— Mastery Teaching materials
— teacher entry skills and attitudes
— teachers exposed to other Teacher Corps training

Yet, the overall conclusion that the impact was effective and positive seems supported.

Joyce and Showers (1980) summarized research on 200 studies of inservice training. They were trying to identity the components of effective training. Components identified were:

- Presentation of theory or description of skill or strategy.
- Modeling or demonstration of skills or models of teaching.
- Practice in simulated and classroom settings.
- Structured and open-ended feedback.
- Coaching for application (hands-on, in-classroom assistance with the transfer of skills and strategies to the classroom).

Although no training program reportedly contained all of the components of effective training, inservice which incorporated most of them were found to be most effective.

The research by Joyce and Showers has provided a valuable *ex post facto* frame of reference in discussing the impact of the Mastery Teaching training in Indianapolis. The training contained all of the components listed above including the element of peer assistance which Joyce and Showers found to be very important in boosting the magnitude of classroom implementation. Lastly, and unfortunately, the contribution each component may have had on the teacher behavior impact is unknown. Joyce and Showers were unable to totally and accurately assess impact of their inservice training on teacher behavior. Research adaptation of the future may provide answers to some of these questions. ■

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Change in Higher Education: An Uncharted Path

BY RICHARD L. ARENDS
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Project:	University of Oregon/Eugene School District
Cycle:	10th & 12th
Site:	Patterson Elementary School (10th cycle) Churchill High School & Jefferson Jr. High (12th cycle)
Site Description:	Elementary, Title I, had a protective principal; focus was on competency based education.
High school:	Over 1000 students, principal from Cycle 10 moved in as vice principal; focus shifted to interdisciplinary curriculum and responsive inservice. Suburban environment.
Project Thrust:	10th cycle used field-validated materials for their CBE thrust. 12th cycle adopted a research base of knowledge utilization and inservice education literature.

From 1975-79, the University of Oregon engaged in a major effort to develop and implement a new Secondary Teacher Preparation program. Two federal grants, Teacher Corps (12th cycle) and the Deans' Grant (Bureau for Education of the Handicapped), contributed to the effort. Funds were used to train faculty, provide release time for faculty to work on the project, to survey existing research and promising practices, and to write the hundreds of documents that now fill the Teacher Corps and Deans' Grant files.

There are several things to look at as outcomes: actual change in the design of the secondary program, perceived change in staff interactions, and approval of the new program by the state's accreditation agency. A fourth outcome is the involvement of public school personnel in planning our teacher preparation programs.

Viewed from a micro level, the four-year effort produced some improvements in the way secondary teachers are prepared to enter their first teaching job. One improvement is that the secondary program has for the first time, clear goals and objectives for the total program. A careful analysis of how instructional activities assist in accomplishing the overall goals was completed for each course and practicum. Faculty energy is more directed toward achieving program goals than toward reaching those of the individual instructor. An analysis of course guides and other program documents shows serious attempts were made to insure that introduction of specific theories and strategies in one course is extended in the practicum experience and built upon in later courses and field experiences. For a college faculty unaccustomed to integrating instruction, this represents a significant change.

A second change in teaching behavior resulted from the creation of faculty teams assigned to teach each of the three instructional blocks. This shift in the technology of instruction is seldom seen on university campuses and can be considered a major breakthrough. It forms permanent units in which mutual assistance for instructional problems can occur and norms can be built encouraging continual problem solving and experimentation.

Although the new program is primitive and may omit several important variables, it has established procedures and criteria for selecting students into the program. Common sense, if not empirical evidence, suggests that over time these requirements will help insure the quality of those allowed into teaching and will provide the university with a mechanism to help people in the public schools moniter entry into the profession.

There has been, however, no major paradigm shift in the way teachers are trained the the secondary program. Students still take the majority of their coursework in the numerous liberal arts departments, and a substantial proportion of the work in the "professional component" is still conducted under the auspices of other units within the College of Education but outside the Division of Teacher Education. Practica are spread among students in ESCAPE, the student-operated field experience; and cooperating teachers in the public schools. Although there is teaming within the new block program, we still find fragmentation of effort and lack of connections among the units contributing to the training.

Who Was Involved

During the four-year planning period, many people worked together:

- *SEPREC*, the Secondary Education Program Review and Evaluation Committee, was formed by the Director of Secondary Education in 1976 to identify weaknesses in the existing program, brainstorm characteristics of an ideal program, and collect and study ideas from theory, research and validated practice that could benefit program revision. Membership included all major Secondary faculty and several undergraduate and graduate students.
- *The Associate Dean of the Division of Teacher Education*, who proposed a five-year teacher preparation program shortly after his appointment to the post in 1976.
- *The Director of Teacher Education*, who links the College with accrediting and certifying bodies and with the University's Teacher Education Committee.
- *The University Teacher Education Committee*, with majority membership from the College of Education and also membership from other divisions and departments of the University, has program approval authority within the University for all programs in teacher education.
- *The Consortium Council*, which consists of members of the College of Education, the superintendents of three neighboring school districts, and the presidents of the Teachers' Associations in those districts, has first -approval authority for all programs offered by the College of Education at the University of Oregon that lead to state certificates or endorsements.
- *The Ad Hoc Consortium Committee*, a group of 32, was appointed by the Consortium to study and make recommendations for the Secondary Preparation Program. Membership included 11 members of the Secondary faculty, six representatives of the public schools (a teacher and an administrator from each of the three districts), four faculty members from other professional schools of the University (art, music, health, physical education), seven students from the University, and four faculty members from other divisions within the College of Education.
- *NCATE*, the National Council for the Accreditation of Teacher Education, which, in 1974, identified some problems with the secondary program having some impact on subsequent administrative decisions for staffing and development.
- *TSPC*, Teacher Standards and Practices Commission, Oregon's accrediting agency, indicated some reservations about the old program.

Assumptions and Strategies

The overall strategy for program change was to follow the basic process below:

1. Identify the problem (data gathering).
2. Identify a solution (application of knowledge).
3. Develop consensus for the solution.
4. Develop the program (extend participation and ownership).
5. Gain approval from governing groups.
6. Implement the program.

The sequence is a common one in change literature, reflecting a linear and rational approach. As we applied the strategy, characteristics of the institutional organization (a loosely-coupled system in which goal consensus rarely extends beyond small units)began to interfere when the first solution—the five-year program—was proposed. Territorial, political and financial concerns displaced the use of knowledge as a central guide in development of an acceptable program. Those who had not been directly and continuously involved in the process but who would be affected by the change seemed to regard it as externally imposed, and their adaptations eventually reduced the proposed change to its current minimal level.

With the use of social resources from Teacher Corps, and the Bureau of Education for the Handicapped (BEH), and individual resources such as time and energy, the faculty in the Division of Teacher Education and members of the Teacher Corps staff spent four years attempting to build a new and different teacher preparation program. In the remainder of this paper, we describe several reasons why larger, more far-reaching change was not accomplished.

Rationalistic Models of Organizations Insufficient to Explain Universities

The federal funding agency, in this instance Teacher Corps, and faculty and staff in the Secondary Program worked from the assumption the university was a rational organization where rational planning models can be applied. The funding agency required involvement from key administrators within the College of Education, believing they had control over resource allocation to ensure institutionalization of change efforts, and they required participation of major faculty within an instructional unit such as the Secondary Program in project activities. Monies from project grants were used to release faculty for planning and development activities and for encouraging participation of colleagues in the public schools. This model assumed common goals could be described and resource and administrative support could be applied to achieve long-range efforts tied to these common goals.

Although some activities at a university can be ex-

plained through this rational model, it is insufficient to explain much of what goes on. In subsequent efforts, we would prefer to incorporate into our strategies for change a conception recognizing the"loose-coupling" Weick (1976) described as characterizing the organization of a university. This model would allow us to see the weak links between various units and departments and to observe that action in one (here, a College of Education) may have no consequences or effects on another (a College of Liberal Arts). It heightens our recognition that unit administrators within universities may have power and influence within their own particular unit, but are actually the pawns of faculty governance in the larger organizational setting. Finally, it would make us recognize the interests of the various units are, in most instances, more important than the goals and objectives of an overall organization or program.

Lack of Communication and Connections Among the Various Units

Traditional expectations have been placed on faculty members in institutions of higher education rewarding them for autonomous, individualistic and independent behavior rather than for collaboration. Furthermore, most institutions of higher education have few channels for communicating across administrative units or arrangements where people who develop new programs and decide to initiate them can gain the commitment and participation of colleagues. Seymour Mandelbaum (1979) wrote,"university faculties often appear as *freedom maximizers*. They jealously defend the autonomy of individual professors". This freedom, in our judgment, prevents building the connections and collective action needed in program development efforts, particularly if the program demands curriculum integration.

Charter of the University of Oregon

A consideration in the stream of events and feelings in this particular case is the set provided by this University's charter as it applies to governance issues. Unlike other institutions in the state system of higher education, the University of Oregon faculty are explicitly given the power to establish and maintain their own internal system of governance and "to prescribe the course of study to be pursued in the University. . ." The Charter has been interpreted to mean faculty are responsible, subject to the supervision of the State Board of Higher Education, for determining curriculum, academic requirements, student activities and student discipline.

The implications of such a strong charge for self governance are obvious: when a proposed change involves not only the best thoughts of internal personnel but also takes into account the mandates of external agencies, conflict with the Charter is a *fait accompli*. The proposed revision of the secondary education program, although congruent with the predisposition of the Charter and with the traditions of higher education in that it applied knowledge gleaned from research findings, carried with it the stigma of accepting external authority. The standards of the state's Teacher Standards and Practices Commission, as well as those of the National Council for the Accreditation of Teacher Education, were incorporated in the design of the new program and in the configuration of the University's Teacher Education Committee. The latter group's composition had been specifically designed so we could justify our claim that teacher educators controlled the program for teacher education. It was on that issue the cross-campus groups gathered forces to press the total university faculty to reconstitute the committee so the College of Education members would not be a voting majority.

Although the Charter may be unique in the state, the underlying stance is certainly not unique in higher education, and the impact of internal vs. external control issues in the context of traditional values of higher education institutions remains a powerful factor in the implementation of change.

External Control and Accountability

Related to the discussion above is the question of accountability. If external groups controlling accreditation, as well as field practitioners as represented in the Consortium, can influence the construction of a University program, who, then, ought to be held accountable for the quality of the outcome of that program? Clearly, the perspective of University faculty is that they end up holding the bag, for the accreditation agencies and the contributing practitioners do not participate in the implementation of the program and are not, through any legitimate or ongoing authority, held responsible for that implementation. Within that larger context, research-oriented university people question the soundness of the judgment of those who use their experience as a basis for constructing program components. Academic freedom, external controls, and attribution of limited and subjective viewpoints converge in an intensely value-laden conflict.

Temporary vs. Established Groups

Status arising from longevity in the system is not unique to the University, nor is status connected with particular kinds of endeavors. Legitimate authority arising from established status became a vital factor in our change effort. As we reflect upon what happened, we can see among the College of Education proponents of change there was only one person who had accrued legitimacy over time: the Chairperson of the Teacher Education Committee. However, through a series of unavoidable and unanticipated convergent events, that person was not continuously and intimately involved in either the program development process or the design of strategies to carry the program proposal smoothly through the university committee. The temporary groups, who did most of the work in developing the new program, were composed primarily of external representatives of field practice and internal, relatively recent, untenured faculty members who were not well known to the total University committee. The established groups, mostly representing departments and traditional coalitions, were composed entirely of individuals who had long-standing credentials across disciplines in the university.

As we review events and the dynamics involved, we

can grasp more completely the currents running against acceptance of the change proposed. What we needed but did not have was a strong mandate from the established faculty to proceed with exploration of change for program improvement; we also needed to involve those high-status individuals who would shepherd the change through the committee with the force of personal commitment. We remain baffled about how to foster such commitment among persons whose major excitement is with their own discipline and for whom teacher education is, at best, a small but profitable sideline.

Lack of Common Paradigm to Guide Curriculum Development

There are important differences in the ways faculty members in various departments within a university view the world and organize themselves for curricular decisions. It is atypical for faculty from department to department to attend each other's conventions, to conduct research jointly, or to read each other's publications. Therefore, when a strategy based on knowledge utilization and research adaptation is used in a joint committee, participants may not know that research literature, may have little conception of the research paradigm guiding inquiry in the field, and may be unaware of the conditions under which the knowledge applies. So, even though knowledge is emphasized in universities as guides for action, knowledge produced under unknown, misunderstood or unvalued methods of inquiry is not very compelling or convincing.

Lack of Research on Change in Higher Education

The planners within the Secondary Education Program and the Teacher Corps facilitators were very familiar with the literature on change in education. Analysis of planning documents shows ample use of the findings of the Rand Studies (Berman and McLaughlin, 1974), the studies of dissemination and knowledge utilization (Sciber, 1972). The concepts guiding the thinking of National Teacher Corps and its research adaptation projects have been based on that same literature. This literature has given us many insights into effective strategies for promoting change. These learnings include the need to see change from an organizational prospective, to involve those who are affected by the planning, to appreciate environmental and community factors, and to design long-term processes and procedures to guide current action. However, this literature has been based on experiment and studies of public schools, and universities are quite different organizations.

Finally, we know precious little about the actual patterns of how knowledge is used in change processes. We are beginning to understand that in the process of creating or implementing a new program considerable adaptation will occur from the design to the implementation stage. We don't know how various units, departments and faculties within universities will behave to affect the adaptation process. In this instance, for example, which groups and which faculty members were provided opportunities to influence the final product? Which were denied that participation? Would broader participation have produced a more complete revision of the Secondary Program or would it have diluted even more the final product? The research on change and knowledge utilization in higher education remains to be done. ■

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The Teacher Training Paradox

BY RONALD B. CHILDRESS

Project:	West Virginia College of Graduate Studies/ Clay County School System Teacher Corps
Cycle:	10th
Site:	Clay Elementary School
Site Description:	Rural Appalachian school with 650* students, 26 teachers and four instructional personnel employed by the project. The school is located 60 miles from the college; 18 college faculty were involved with the project (12 extensively). Clay County residents: 90 percent are natives of the county with 60 percent related to each other, at least by marriage.
Project Thrust:	To deliver and to determine the impact of a nontraditional graduate level elementary education program on university faculty and program, teachers and students in a single rural school.

Staff development in this project had three major thrusts — graduate courses, inservice training, and support /technical assistance. In terms of the research adaptation process, project efforts were focused within the graduate education component of the overall model. An explicit set of assumptions about the nature and purpose of graduate teacher education served as the base for designing the elementary education prototype.

These assumptions, considered as purposes of the total system from which more specific curriculum goals, objectives, and strategies were generated, were divided into six general areas.

The curriculum should provide:

1. the base of knowledge and skills necessary for teachers to function professionally and independently;.
2. a disciplinary base;
3. a sequential set of experiences;
4. minimum admission standards;
5. measurable objectives; and
6. some choices of areas for concentration (Grodsky, et al., 1976).

Goals & Objectives

The curriculum was implemented in such a way that students could achieve competence in areas congruent with the rationale and purposes of the system. Therefore more specific curriculum goals and objectives were needed. These goals were seen as an integrated set of related competencies rather than as discrete skills or content areas to be mastered.

From the statement of curriculum goals, the objectives were divided into two general subcategories — cognitive and application. The cognitive objectives related directly to the knowledge gained in the courses making up a student's plan of study. The application-oriented objectives were the behavioral results of a teacher's attainment of the cognitive program objectives. Essentially, these sub-objectives represented the desired outcomes of the teaching practices of project participants.

Implementation Design

Sequentially, the curriculum was divided into four components for implementation:

a) research, planning and evaluation techniques;
b) child development and learning;
c) an area of concentration (specialty), i.e., language and reading, early childhood education, instructional planning, or middle childhood education;
d) a final symposium where students and faculty assessed the expertise gained by the student throughout the total program. A research project in the student's particular area of interest is completed and critiqued by peers (Grodsky, et al, 1976).

Evaluation Design

Various instruments and measures were used to evaluate teachers and pupils from a comparable county, McDowell County , as a control group. Information was gathered at selected points during the Teacher Corps program consisting of observations, scores and ratings of the various program participants. In some instances, the total group was analyzed while in others, specific sub-sets were examined. Both independent and group measures were available from which to draw inferences and conclusions.

The general evaluation employed was a pretest/ posttest design using an equivalent posttest only control group. The two sets of sub-objectives, cognitive and application-oriented, established the parameters for determining whether the teacher graduates possessed the knowledge and skills and the teaching practices which the project sought to develop.

There were four major impact areas in the evaluation design: (i) program delivery, (ii) impact on teachers, (iii) impact on students, and (iv) needs assessment.

Consistent with the pre/posttest evaluation, a series of instruments were administered to teachers in the project:

— The Minnesota Teacher Attitude Inventory (MTAI), designed to measure teacher rapport with students and satisfaction with teaching as a profession.
— A multiple choice instrument (Cognitive Test) covering the content of nine of the major courses offered in the middle curriculum.

* Data taken June 1975.

— The Purdue Teacher Opinionnaire (PTO), which yields ten scales measuring teacher perception of the school, the school system, the curriculum and the community.
— A Teacher Biographical and Professional activity summary which asks teachers about their academic and professional history, professional reading and activity, and professional organizational activities.
— A Teacher Self-Evaluation rating scale which gives teachers an opportunity to indicate the ways they teach and the kinds of activities which characterize teaching in their classrooms. In addition, two instruments were used to observe teachers in the classroom. One was the Flanders Interaction Analyses System designed to observe the patterns of interaction between teachers and students. The second, was a project-developed instrument, the Clay Observation Record (CORe), designed to observe selected teacher practices related directly to the list of application-oriented objectives.

Three instruments were given to students in the target school to determine the impact of the project:
1. The Stanford Achievement Test Battery (SAT) — individual achievement tests given to all students in grades 1-6.
2. The Educational Development Series Achievement Test given by the state in grades 3 and 6.
3. The Student Attitude and Activity Survey (SAAS), an adaptation of an instrument developed by the Utah-Sail System Approach to Individualized Learning, which provides measures of student self-concept, attitude toward school and various school subjects, and the degree of individualization and learning activities.

Initially, comparisons were made between the pretest/posttest measures of all program participants. Comparisons were then made among the groups of participants according to their program designation. Finally, teacher comparisons were made between experimental and control groups on the appropriate posttest measures.

Basic analyses of these data were made using 'F' and *t*-tests for differences and percentages and frequencies for certain ordinal data elements. Document analysis and observational records were used on such instruments as CORe and the Flanders.

Description and Interpretation of Impact

Research adaptation involved a formative and summative analysis of impact evaluation results and a continuous effort to relate these data to the planning, development, refinement, delivery and assessment of the model graduate program. Ultimately, the research adaptation process resulted in modifications and impact on the direct (teachers) and indirect (students) participants, the involved institutions, and the related impact evaluation design and research adaptation strategies.

Results and findings of the impact evaluation process as presented in this paper were classified as teacher/student impact and the college program/faculty impact.

The results of the student data support the position that longitudinal activities are more important in determining the overall impact of the Teacher Corps project than any isolated, short activity. However, even within the student achievement data area, there were many instances where clear differences were established. When data were examined for the population with which Teacher Corps began, i.e., grade one, there was a "thread" which would indicate partial success with these pupils.

Stanford Achievement Test Results

Results of the Stanford Achievement Test data for Clay County Elementary School for 1975-77 were analyzed using subtest group means, standard deviations and numbers of observations for the three years. Subtests included were vocabulary; reading (part A); reading (part B); total reading; word study skills; mathematics concepts; mathematics computation and application; listening comprehension; total battery; total auditory; total reading and total math. The data were analyzed for each grade in terms of grade equivalent scores.

Overall comparisons showed grade one pupils generally increased test means for 1976-77. However, the final 1977 means were lower than 1975 test results. Grade two showed that the 1977 results were the lowest of the three-year period. Grade three data showed 1977 results to be higher than the previous years while grade four had mixed results — 1976 and 1977 results were similar but lower than 1975 results. Grade five clearly showed 1976 results to be better than either 1975 or 1977. Grade six showed 1977 had a higher means than the previous year's.

During 1977, because of a severe winter in Clay County, approximately one month of instructional time was lost. These data reflect approximately one month or one-tenth less instruction than in a regular school year.

CTBS Results

The state-county comparisons on the Comprehensive Test of Basic Skills data showed Clay grade three pupils to be below the control in reading vocabulary; comprehension; total reading; language total; math computation, concepts, application; and total scores, basic skills and reference skills. Grade 6 data showed Clay pupils scored higher for all subtests except reference skills. However, in no instance did Clay County or control group scores meet or exceed the norm data available.

SAAS Results

Pretest and posttest results from Clay County pupils only show minor shifts in some response areas and substantial changes in others. Areas of greatest change include a drop in desire to come to school and a slight increase in stating a feeling of being sick when thinking about school. A 10 percent drop was also noted when pupils were asked if the things they did in school made them feel good. A drop in positive response to whether an academic subject such as math was liked was also noted.

Positive results or changes were noted in such areas as taking a nature walk and having visitors in school. Teachers were viewed as asking questions which

caused the pupils to think hard. There was an increase in willingness to finish a job and in taking care of property by putting things away.

A similar pattern of responses was seen for the Clay County pretest and posttest data for intermediate grades. The overall pattern was one of a downward change in liking school, an increase in feeling sick when school was mentioned and a slight increase in feeling unhappy or sad.

Obviously, the student data results presented areas of paradox. Possibly the area of greatest paradox was in the analyses of data from the teaching faculty itself and the relationship this had with individual student responses on the SAAS. For example, the results of the Flanders Interaction Analyses data indicated that between pre-observations and post-observations, Clay County teachers showed a tendency to become more structured and less student-question centered on the posttest. This suggests that teachers began to move in the direction of being goal and content oriented. They had more direct concern about meeting stated goals and objectives than had previously been identified.

One interpretation of this phenomenon is that the teachers were more dogmatic, less supportive and less student-oriented. However, these results did not appear when student activity and attitude summaries were analyzed in relation to activities in which teachers participated in concert with students. For example, students indicated they were given praise, had an opportunity to ask questions, and felt reasonably good about their schooling situation. In the self-report of teachers, the respondents indicated that they gave much attention to pupil questions, concerned themselves with the results of student input, were very much involved in individual differences as they related to instruction and were able to provide useful feedback in various student activities.

A positive interpretation can be drawn from the evidence that teachers were less dependent on the textbook as their only source of instructional material. Apparently, teachers were more responsive to multimedia approaches and less responsive to a straightforward textbook style only.

Other Indicators

Classroom Observation Record data showed a more directive approach on the part of the teachers than would normally be expected for persons participating in a forward-looking, innovative program. It should be noted that elementary education is experiencing a back-to-basics swing. There seems to be an orientation towards classroom management, classroom discipline, and classroom associations requiring a good deal of response on the pupil's part without much pupil interaction.

The MTAI and PTO results suggest that Clay County teachers were less able to work with pupils in a cooperative manner, felt less secure, and had less group solidarity resulting from common goals, understanding, efforts and achievements than did the norming population for these instruments.

College Program/Faculty Impact

Solving the logistic problems inherent in delivering a graduate program at a remote site was a major result of the total project effort. This process necessitated defining course objectives more precisely so that methods of presentation and organization could be adapted to the particulars of the situation, and to the availability of faculty and resources. After objectives were more specifically defined and related to course activities, a modular approach was often taken and new course formats used. For example, some courses which were usually taught in a standard three-credit format were successfully broken down into independent one and two-credit courses.

Concurrently, there was a greater focus on providing completely field-based instruction and the increased interaction and involvement within the public school. Available data suggest that the process was beneficial for college and school system personnel alike.

There were indications of impact on faculty involved in the program. For example, there was improved understanding of how to facilitate educational change in a public school setting, increased skills in structuring and packaging courses for field-based delivery, improved ability to relate the theoretical aspects of courses to the practical aspects of teaching and increased flexibility in dealing with individual students.

Programmatically, the results of the impact evaluation suggested that more emphasis should have been placed on how teachers perceive the usefulness and application of the curriculum in operation. As a result, faculty used a variety of strategies to illustrate the usefulness and application of the model curriculum for the practicing teacher.

In addition to the usefulness/application outcome, the results of the impact evaluation also provided data for the development of a rationale for more efficient and effective curriculum organization and delivery. Effective and efficient delivery were directly related to curriculum diversity and the availability of resources. With increasing demands on program and institutional resources, the capability for adequately delivering an increasing number of concentrations diminishes. Consequently, during the year following the Teacher Corps project, the Elementary Education faculty reduced the number of available concentration areas from five to three.

In restrospect, college level program and faculty involvement in the total Teacher Corps model significantly increased institutional awareness and sensitivity to the concept of alternative delivery systems. Beginning with the 10th cycle project, there has been substantial faculty energy devoted to identifying, implementing and evaluating alternative delivery systems. Efforts are currently underway to deliver selected program components via teleconferencing this summer.

Most importantly, perhaps, the Teacher Corps experience significantly impacted institutional understanding of the need for continuous faculty development. The importance of a workable faculty development program in a field-based institution was made clear through the demands and rewards of the Teacher Corps project. Consequently, the following guidelines

for planning and developing such projects were identified:

1. The critical need for sufficient time for detailed planning and collection of benchmark data cannot be overlooked.
2. Mutually agreed upon, detailed objectives are necessary at the project planning stage if appropriate measures are to be identified.
3. Evaluation designs must be realistic in terms of time, expectations, and other constraints.
4. Since impact evaluation and documentation thrusts are often in direct conflict with service thrusts, more emphasis may be placed on process and the collection of naturally occurring evidences of change.
5. A careful monitoring and recording of events in the field where instruction and goal behavior occurs will likely produce data just as reliable and valid as formal test results. Furthermore, this emphasis on desirable outcome behavior can encourage its internalization and institutionalization.
6. Greater reliance on unobtrusive measures and more analysis of data collected under less rigid research designs demands more sophistication and technical competence, not less.
7. In projects such as Teacher Corps, there is a need for a balanced analysis of processes and outcomes.
8. Impact evaluation and documentation plans must be flexible enough in terms of project goals and plans to accomodate unanticipated changes in societal and institutional needs and resources over time. ■

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The Impact of Teacher Corps Research Adaptation Projects on College Faculty and Programs

BY KEITH ACHESON
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Since 1975 the 21 projects of the Teacher Corps Research Adaptation Cluster (RAC) have involved many university and college faculty members in a wide variety of activities, in a variety of roles and in varying degrees of participation. Has this participation had any effect on these people? Has it altered anyone's career substantially and permanently? Has it changed the programs for teacher education which these people direct? In other words, what has been the *impact* and what *changes* have ensued as a consequence of being connected with a project?

The method chosen to get some answers to these questions was to arbitrarily take every other name from an existing list of the projects which had been in the Cluster during Cycles 10,11, 12. The randomness of the sampling process eliminated the investigator's home institution and also his alma mater. The directors who headed the selected projects at the time of their membership in the Cluster were contacted by telephone and asked a series of questions.

The essential question was: "What has been the impact of your project on college (university) faculty members?" Subsequent discussion touched on the distinctions between those who were directly connected to the project and those who were only indirectly involved, those who were permanent, "hard money" faculty members and those who were "soft money" members only there for the life of the grant(s), those who were tenure-track and those who were not.

Each of the above distinctions would be expected to have an obvious effect on the impact or change one might observe. Faculty minimally involved will be minimally affected; those who are "permanent" will be less influenced by the urge to innovate than those who are "temporary;" those who are temporary will have less influence and impact on the institution (IHE) than those who are already varsity players. Many more distinctions could be made, e.g., those who were already involved in research and development are more likely to be involved in and impacted by the R and D aspects and opportunities available in a research adaptation project; they might also be more easily disillusioned by the many facets of Teacher Corps which are not conducive to research, development, dissemination, or demonstration. These facets (some call them "lay-ons") do not require reiteration to directors from the era of 1975-1978 but for posterity, I'll mention a few, from the perspective of whether a faculty member active in these pursuits would be likely to be significantly impacted or lastingly changed by involvement in the activities. Teacher Corps required collaborative decision making, community participation, policy determination by representatives of three or more agencies (the representatives may not be intimately involved in the actual project). Attention must be given to developing programs and activities for the

exceptional child, multicultural and bilingual education, diagnostic and prescriptive teaching, documentation, evaluation (perhaps also faith, hope, charity, liberty, equality, and fraternity). Would Piaget, Montessori, or Francis have flourished in this milieu?

Given the skeptical overtones reflected in the above paragraph, I was prepared for the respondents to report something like the following:

(1) The faculty wouldn't get off their campus.
(2) They only care about their job security.
(3) They found Teacher Corps to be impossible.
(4) They looked upon the project simply as a source of funds.
(5) They looked down on the project.
(6) They couldn't get along with the school people, the project people, or each other.
(7) They just continued to do the same old things they've always done—except in a new location.
(8) Their programs look just like the programs that existed before the project.

There was, of course, *some* of the above, but not *all* of the above, nor *only* the above. I was pleasantly surprised and encouraged by the vignettes or mini case studies reported by the respondents. The remainder of the paper shares some of these with the reader and ventures to draw some generalizations from the admittedly small and biased sample. Some comments will be made about the mode of investigation followed in generating this report.

The first director who was called reported considerable concern about the faculty who were outside the project. They saw the project as an intrusion on their domain and appeared to resent its achievements as much as its frustrations. However, upon reflection, he recalled that the special education person for the project had been able to combine and coordinate activities with another funded project. They co-sponsored and achieved critical mass for a program which has survived the project. The ideas and procedures stemming from the project had greater impact than the mere financial support, though they would not have been tried at all had the funds not been available.

Beyond the willingness of the local district to contribute funds and resources from other sources to common goals, another important factor affecting this special education project was the compatibility of the goals with the master plan of the state system of education. Stated differently, if the project, the state and the district had been at cross purposes, then the potential for impact on the concerned faculty member would have been loaded negatively.

The next interviewee immediately thought of a tenured associate professor who became involved in the development of materials through the project. This new interest, along with a developing expertise, ultimately led to taking a job at another institution; hence, impact led to change. One may ponder whether the change was behavioral, conceptual, attitudinal, technical, or professional and whether other influences were more important than those exerted by the project experience. One may at least say that without the project, the opportunity to develop an interest and a talent leading to a significant career change might never have occurred.

As an example of the permanence of change, the second project—which is currently not receiving Teacher Corps funding (nor was the one reported first)—has in operation, as a college activity, a field-based masters program that began under the project's aegis. Three replications of the original pilot program have been completed with apparent satisfaction and continued experimentation and improvement.

Another legacy of the second project is an operation piloted under Teacher Corps support in which a resident college professor spends a day a week in a specific school plus another three weeks during intensive field experience for interns, providing supervision for them and inservice opportunities for teachers.

The third director who was interviewed had developed a cooperative, collaborative, field-based responsive inservice program. Although not funded by Teacher Corps during the next cycle, the program was continued by the college and has multiplied to include two other sites of operation. A former Teacher Corps staff member serves as director. This "career ladder" has been repeated in many other projects, e.g., a teacher chosen as team leader becomes an inservice coordinator in the next project and then is selected by a governing board to serve as director of a Teacher Center. Would these people have emerged regardless of the project? It seems unlikely. The national Teacher Corps emphasis on site-based delivery, integration of preservice and inservice, shared governance, adaptation of field-tested products and processes all converged to identify and attract individuals who could experiment and learn from such experiences. Some of these individuals have moved into continuing, if not permanent, positions on the IHE faculty.

Did all participants emerge as believers and doers? By no means. However, in the institutions sampled, there appear to have been enough who did to make a noticeable difference in the continuing activities of the institution and some of its faculty.

A related result was also reported by the third project. Apparently the thinking of the dean was modified enough to recognize the viability of full scale, field-based undergraduate and graduate degree programs with regularly assigned faculty to carry them out. An ad hoc committee has been formed to look at the implications of operations which are responsive to the field. Such matters as tenure, promotion, need for development of special materials, and what scholarly activities can accompany field assignment will come within the purview of this committee. *This is change!* A whole teacher training institution has become less parochial and more client-centered with inevitable impact on its own faculty . This phenomenon can be contrasted with the situation in a number of other institutions visited during the past year by this investigator. Teacher education faculty in general, and those at state colleges in particular, appear to be reluctant to leave the campus except to go to conventions and social gatherings. Several members of the RAC have commented on the stimulation of associating with

others who are involved in the development of new programs and the application of research findings to actual practice in the real world.

The real world has changed. One can see implications of change in recent studies, e.g., Rand, TAG, NIE, Joyce, et al., or by visiting projects, colleges, and schools. It has become apparent that teachers are not as likely to commute to the campus for inservice training or to accept instruction that they see as irrelevant or to participate in grants that seem to have been mounted for the benefit of those who are elsewhere.

The fourth project had used faculty members in a different way than the others. This project has a long history of association with Teacher Corps. Two faculty members from previous projects have achieved tenure-track appointments. Others are hired with the explicit understanding that they are strictly temporary. The pattern is representative of one of three paradigms which emerged from the interviews. I shall use the TAN convention (from Bridge) in naming them, i.e., "Take-out," "Assist," and "No Trump." Hiring temporary, soft money, IHE faculty is *Take-out* strategy like picking up a pizza. The *Assist* strategy pertains to the faculty that is looking for help in doing something they wanted to do anyway, like getting a grant for Professor Pauling to experiment with Vitamin C. The *No Trump* plan is more sophisticated. Here, in a sense, a person is the institution; he or she may work with this college or that one, with hither district or thither. Regardless of where the project is housed, this pied piper will rid you of your rats, be they in Middlesex, village or farm. He or she not only knows all of the other pipers but most of the rats as well.

Whether a project is T, A, or N in nature has a profound effect on what sort of impact one may reasonably expect on faculty members. For example, interviews with fish who are undergoing mid-life crises should note whether the fish in question are in the ocean, in tanks, or on ice in the market.

The next interview was with a project director who saw the field-based activities as an opportunity for faculty members to conduct research. To these professors, more important than delivery of inservice to the field is the chance to gather data, conduct and systematically study interventions in school settings. A related strategy for involving faculty has been disseminated by Herbert Hite at Western Washington University. Professors are paid a portion of their salary to develop a course at a field site with attention paid to expressed needs of the clients, field testing, continuing input from the field, formative evaluation, and other desirable aspects of field-based R and D. The reward structure of the university cannot be ignored, but teaching, research, and service can be combined in a project which plans sensitively for involvement of faculty members in ways that can pay off for them professionally.

Another RAC project uses curriculum development as a vehicle for getting school and university people to work together. There are immediate advantages to this strategy. There is a built-in sense of ownership on the part of the practitioners when it comes time to implement and adapt the program in school sites. There is also a safeguard against developing an ivory tower, unteachable curriculum. Moreover, the possibility exists for validating the procedures and products on scientific as well as pragmatic grounds.

Another project had a team who developed a year-long program of inservice activities in which teachers helped each other. One team member has returned to public school work after completing a dissertation. Another continues as a university instructor, making use of the experience and the expertise gained from the project.

Another director reported that a full professor who had been affiliated with their project had, as the result of his experience working with schools, modified a required methods course to incorporate more field experience and integrated on-site activities into the substance of the course which he continues to teach. Furthermore, at this large institution, faculty members who took part in the project in one or another cycle of its existance appear to be the best tuned-in to the current needs of schools, inservice and preservice teachers.

The director at another large state institution was pleased that a faculty member, after working with the project, had started and is conducting an off-campus graduate program in another city several days per month. This director also reaffirmed what several others had expressed regarding the stimulation and broadening experience of working for several years with other members of the Cluster. The exchange of ideas, problems, solutions, designs, strategies, and resources provided opportunities for personal growth and challenges which are not always possible in other professional gatherings.

As the result of surveying about half of the directors in the RAC and hearing what each of them regarded as examples of the most significant impact on faculty members due to the project or to the Cluster, I am emboldened to state some general findings.

But, first, a brief digression in defense of the methodology employed. Whoever heard of calling up a few people, asking them some open-ended questions and calling it Research? Well, Gordon Allport is quoted as saying, "If you really want to find out how people feel about something, why not ask them?" Of course, you can imbed your questions in a distractingly long and boring instrument or perhaps give a semantic differential (which, in the present case, might have determined if directors saw impact as being "fat" or "thin"). Two studies which have made their own impact by allowing someone to mosey around and ask questions are those of Flexner on Medical Schools and Conant on Secondary Schools. It helps if the investigator is reputable, trusted, and biased toward objectivity though utlimately any study becomes subjective—if not at the point of data collection, then surely at the point of reporting and interpreting. So much for the digression, on to the biased interpretation.

At the beginning of the paper are eight assumptions or prejudgments (prejudices, that is). How were they borne out in the face of the reports from the respondents?

(1) "The faculty wouldn't get off their campus." Not

true. A common theme running through the memories of RAC directors is that professors did appear to get out of the ivory tower and into the schools. Furthermore, they have tended to remain involved in field-based programs even after outside funding has ceased.

(2) "They only care about their job security." Remove the word "only" and the statement is true. However, the ways typical RAC faculty members have sought to keep their jobs secure include field work, responsiveness to our constituents in the schools, emphasis on adaptation of field-validated products and procedures, institutionalization of successful programs. This sort of behavior is not usually considered typical of teacher educators in general.

(3) "They found Teacher Corps to be impossible." Only partly true. Some found the constant need for contact in the field to be intolerable. Many found that the incessant need to hold meetings can become endlessly irritating. Most of those who survived their time in the front-line trenches have continued in similar kinds of activities. Field-based, integrated preservice/inservice programs which incorporate research adaptation may, indeed, be "where the action is."

(4) "They looked at the project simply as a source of funds." Probably not true. Deans and department heads worry a lot about budgets and keeping them balanced; other faculty members (once they know they have a job) are concerned about the nature of their duties, the opportunities that exist for pursuing or developing specialized interests, and the ways to enhance their prowess in teaching, scholarship (research and publication), and service. In many ways the projects provided these opportunities.

(5) "They looked down on the project." Not generally true. The kinds of activities Research Cluster projects pursued were generally regarded as admirable by critical colleagues. Moreover, the Cluster attracted institutions and individuals who had been active in research, development, and experimentation with teacher education and school change.

(6) "They couldn't get along with the school people, the project people, or each other." One can find examples of such IHE faculty members. They tended to eliminate themselves from projects. There is a self-selection process inherent in the design and conduct of projects such as the ones represented in the RAC.

(7) "They just continued to do the same old things they've always done—except in a new location." Not true. The key finding of this survey was that a good many IHE faculty members from RAC projects did some new things which had an impact on them and, as a consequence, have changed in some rather impressive ways.

(8) "Their programs look just like the programs that existed before the project." Not true. Most programs were expanded and improved either from a point of relevance of content or delivery procedures. ■